





County Palatine of Chester.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH

ON THE

STATE AND CONDITION

WITH REFERENCE TO THEIR

POLLUTION OR OTHERWISE

OF ALL THE

RIVERS & STREAMS

In the Administrative County outside the Area under the
Jurisdiction of the Mersey and Irwell Watershed Committee.

PRESENTED TO THE

RIVERS POLLUTION COMMITTEE

OF THE COUNTY COUNCIL.



CHESTER:

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INDEX.

	<small>PAGE</small>
Terms of Resolution instructing County Medical Officer of Health	1
Action of County Medical Officer of Health thereon	1
Information with reference to the Pollution of Rivers or Streams in Western Districts—	
Belonging to Wirral and Birkenhead Unions—	
Wirral Rural District	4
Wallasey Urban District	9
Higher Bebington Urban District	10
Lower Bebington Urban District	10
Bromborough Urban District	11
Hoyle and West Kirby Urban District	12
Neston and Parkgate Urban District	13
Belonging to Chester Union—	
Chester Rural District	14
Hoole Urban District	17
Belonging to Tarvin Union—	
Tarvin Rural District	18
Taporley Urban District	23
Belonging to Whitchurch Union—	
Malpas Rural District	25
Information with reference to the Pollution of Rivers or Streams in Central Districts—	
Belonging to Runcorn Union—	
Part of Runcorn Rural District	27
Runcorn Urban District	3
Belonging to Bucklow Union—	
Part of Bucklow Rural District	31
Belonging to Northwich Union—	
Northwich Rural District	32
Northwich Urban District	36
Winsford Urban District	38
Middlewich Urban District	41
Belonging to Nantwich Union—	
Nantwich Rural District	42
Borough of Crewe	44
Nantwich Urban District	46
Information with reference to Pollution of Rivers or Streams in Eastern Districts—	
Belonging to Macclesfield Union—	
Part of Macclesfield Rural District	47
Belonging to Congleton Union—	
Congleton Rural District	48

	PAGE
Borough of Congleton	50
Buglawton Urban District	52
Sandbach Urban District	53
Alsager Urban District	54
Summary as to the Pollution of Rivers or Streams in all Districts—	
Area, Houses, and Population	56
Area and Population of Dee Watershed	56
Area and Population of Mersey Watershed	56
Pollution of Rivers or Streams by sewage or bad effluents from sewerage systems	57
Pollution of Rivers or Streams by dwelling houses not on any sewerage system	58
Pollution of Rivers or Streams by trade-refuse from Works or Factories	59
Pollution of Rivers or Streams in the Administrative County of Chester by sewage or trade-refuse belonging to other Counties	60
Conclusions	61
What has been done recently or is being done to prevent Pollution of Rivers, &c.	61
Recommendations	63
Tabular Statement relating to that portion of the Administrative County of Chester outside the Area under the jurisdiction of the Mersey and Irwell Joint Watershed Committee: showing the enumerated and estimated population, the number of houses at Census and at the end of the year 1896, and the area in acres of Districts or portions of Districts in the said portion of the Administrative County, and whether there be pollution of Rivers, &c., from sewerage systems or houses not on any sewerage system, or from trade-refuse from Works or Factories, in the Districts or portions of Districts	65

REPORT OF THE MEDICAL OFFICER
OF HEALTH FOR THE COUNTY
OF CHESTER, upon the state and
condition with reference to Pollution, or
otherwise, of all Rivers and Streams in the
County outside the Area under the Juris-
diction of the Mersey and Irwell Joint
Watershed Committee.

AT a MEETING of the RIVERS POLLUTION
COMMITTEE, held at CREWE, on JANUARY 24TH, 1896,
it was—

RESOLVED—“That the County Medical Officer be
requested to report to this Committee upon the
state and condition, with reference to their Pollution,
or otherwise, of all the Rivers and Streams in the
County outside the Area under the Jurisdiction of
the Mersey and Irwell Joint Watershed Committee.”

A copy of this Resolution was in due course forwarded
to the County Medical Officer of Health, together with a
Map of the Watershed of the Rivers Mersey and Irwell above
Warrington, which is the Area under the Jurisdiction of
the Mersey and Irwell Joint Watershed Committee.

The County Medical Officer of Health accordingly
drafted a form of “Return,” *re* pollution of rivers and
streams from sewage, and sent printed copies of this to
the Clerks or Medical Officers of Health or Surveyors of
the Districts within or partly within that portion of the
County which is outside the Area under the Jurisdiction
of the Mersey and Irwell Joint Watershed Committee.
This form of “Return” asked for information under the
following heads:—

1. Name of District or Portion of District.
2. Population at Census in 1891.
3. Population in December, 1896.
4. Number of Houses at Census in 1891.
5. Number of Houses in December, 1896.
6. Area in Acres.
7. Names of Rivers, Brooks or Streams in District or
Portion of District.
8. Number of Houses provided with Water-closets.
9. Number of Houses on Sewerage System.
10. How is Sewage treated?
11. Is there Pollution of Rivers, Brooks, or Streams
from Effluents?
12. Is there Pollution of Rivers, Brooks, or Streams
from Houses not on Sewerage System?
13. What is the water-supply of the District or
Portion of District?

14. Remarks or Suggestions from District Clerk,
Medical Officer of Health or Surveyor.

In nearly every instance, after the receipt of the "Return," or (where there was some delay in remitting it) prior to its receipt, the County Medical Officer of Health visited the District, and made a personal inspection of Rivers and Streams.

Subsequently a second form of "Return," for the purpose of obtaining information as to pollution of rivers and streams from works and factories was drafted by the County Medical Officer of Health, and printed copies of this also were sent to the Clerks, or Medical Officers of Health or Surveyors of the Districts within or partly within that portion of the County which is outside the Area under the Jurisdiction of the Mersey and Irwell Joint Watershed Committee. This "Return" asked for information under the following heads :—

1. Name of District or Portion of District.
2. Names of Rivers, Brooks or Streams therein
Polluted by Works or Factories, directly or
indirectly.

Pollution from Solids.

3. Are any Rivers, Brooks or Streams Polluted by Cinders, from Works or Factories, being tipped therein or deposited on the bank to be washed in by the first flood ?
4. Are any Rivers, Brooks or Streams Polluted by Sludge, collected in mill-lodges, being emptied therein ?

Pollution from Liquids.

5. Are any Rivers, Brooks or Streams Polluted by waste liquids from :—
 - (a) Ammonia Works, Gas Works, Collieries, and Works for making coal tar derivatives ?
 - (b) Alkali and other Chemical Works ?
 - (c) Bleach Works and Finishing Works ?
 - (d) Waste Bleach Works ?
 - (e) Breweries ?
 - (f) Creameries ?
 - (g) Wool Works ?
 - (h) Waste Silk Works ?
 - (i) Dye Works and Hat Works ?
 - (j) Print Works ?
 - (k) Paper Mills and Paste-board Works ?
 - (l) Paper-staining Works ?
 - (m) Laundries ?
 - (n) Galvanizing Works ?

- (o) Manure Works and Knackers' Yards ?
- (p) Offensive Trades, including the trade of—
 - Blood boiler,
 - Bone boiler or Size maker,
 - Fellmonger,
 - Soap boiler,
 - Tallow melter or Fat melter,
 - Tripe boiler,
 - Blood drier,
 - Leather dresser,
 - Tanner,
 - Glue maker,
 - Gut scraper.

From the "Returns" sent in, and from personal inspection, the following particulars have been obtained. The information as respects each District is given separately, but Districts belonging to the same Union are grouped together. Thus, the Western Districts include those belonging to the Wirral, Birkenhead, Chester, Tarvin and Whitchurch Unions; the Central Districts include those belonging to the Runcorn, Bucklow, Northwich and Nantwich Unions; and the Eastern Districts include those belonging to the Macclesfield and Congleton Unions.

The information is less complete in many respects than might have been expected. This is due to various causes, but largely to the lack of exact knowledge as to facts in possession of some Local Authorities. For instance, the number of houses on a sewerage system was not always known, and the number of houses provided with water-closets in a District was in many cases doubtful. Where the drainage of single houses, or even small groups of two or three, went to, was often quite unascertainable. As regards the streams exact information *re* pollution was difficult to obtain and seldom were any records of previous pollution available. Even the names of streams were occasionally uncertain, the local name sometimes not corresponding to the name on the Ordnance map, and some streams being nameless.

However, the information obtained, such as it is, reveals the fact that there is a very considerable amount of pollution of rivers and streams in the portion of the County outside the Area under the Jurisdiction of the Mersey and Irwell Joint Watershed Committee. This will enable the County Council to take such steps as they may be advised for the improvement of the state of the rivers and streams referred to, and the prevention of pollution in the future.

WIRRAL.

Rural District.

Population at Census, 1891—18707.

Estimated population, December 1896—16520.

Houses at Census, 1891—3052.

Houses in December 1896—3084.

Area in acres—38608.

It will be noted that the estimated population of this District is much below the population recorded at the time of the Census. This is due to the fact that among those enumerated at Whitby, Netherpool, Hooton & Eastham, were 2432 persons engaged in the construction of the Manchester Ship Canal. These formed no part of the local population after 1892.

Since the Census the Rural District of Birkenhead has been added to Wirral. This small Rural District consisted of Bidston-with-Ford and Noctorum, the whole area being 2043 acres, and the enumerated population 456. More recently 61 acres have been taken from Wirral and added to the Bromborough Urban District.

Wirral is bounded on the north by the sea and the Birkenhead Union. On the west are the tidal waters of the River Dee, and on the east the tidal waters of the River Mersey. Except Shotwick Brook and two or three nameless streams near Heswall, which run to the Dee, all the water-courses in the district are in the Mersey watershed. The named streams flowing to the Mersey are the Birket, Arrowe Brook, Greasby Brook, the Fender, Prenton Brook, Dibbinsdale Brook (which is a part of Bromborough Pool), Sutton Brook, Brimstage Brook, Spital Boundary Brook, Raby Brook and Willaston Brook.

Only a small proportion of the houses in this District are provided with water-closets. The number is not known to the Local Authority.

At Moreton, having a population (including Lingham) of 464 at the Census, the only public drain laid by the Authority is about 150 yards long. It is of 12-in. pipes and discharges foul farmyard drainage into a ditch by the road side, which runs to the Fender. The vicarage is unoccupied and Old Moreton Hall, drains to a cesspool, apparently without overflow, but Moreton Hall (Mr. Smith's house) is drained into the Fender.

The Arrowe Brook, as it passes under the Bridge on Old Meols Road, was noticed to be polluted. This appeared to be from the sewage of Saughall Massie, Greasby, Frankby and Irby.

At Saughall Massie, having a population of 189, the sewage runs by the roadside and includes drainage from cow-houses, stables and piggeries. It is conducted to an open cutting and so to 12 acres of meadow land, for the irrigation of which it is used. The cutting can be flushed by turning water from the

brook into it. The arrangement for treating the sewage of this village should be sufficient, but when inspected some fouling of the brook was taking place through want of attention.

At Newton and Grange, having together a population of 184, farm yards, stables and shippsons and a few cottages are drained into roadside ditches, which were very foul when inspected. The Newton drainage probably finds its way to the Birkett. At Grange the overflow from the cesspool of the Black Horse Hotel delivers into a roadside ditch. The landlord employed someone to cut off the overflow, but the hotel sewage still finds its way into the ditch.

Caldy, having a population of 170, together with the Manor-house, was drained 2 or 3 years ago. The sewer discharges into a cesspool the contents of which are pumped on land arranged for irrigation. Not all the houses in Caldy are connected to this sewer. One ditch was noticed to be very foul from shippsons drained into it.

Thurstaston, having a population of 145, is sewered to the estuary of the River Dee by 9in. pipes. There are 3 cesspools in the line of pipes with overflows to the river. The cesspools are emptied once a year. Many houses are undrained.

Irby village is drained in part by a foul ditch and in part by 9in. pipes to a field of about 6 acres, where are rough arrangements for irrigating land. Many of the cottages are undrained.

The main portion of the village of Frankby is drained by pipes to a foul ditch, which discharges into Greasby Brook and eventually into Arrow Brook. The highway from Frankby to Greasby crosses the Greasby Brook, and as the brook was passed it was seen to be polluted. By the road on the right, coming into Greasby, foul water (from houses or thrown down by the villagers) finds its way into the brook. Thus though there is no sewer in Greasby, the village sewage pollutes the Greasby Brook.

Part of Moreton, Saughall Massie, Caldy, Frankby and Greasby are supplied with water from the West Kirby Water Works.

At Upton, in the grounds of the Convent Schools are two cesspools, one being situated about 10 yards and the other about 20 yards from the roadside, and both overflow into the road ditch, there being nearly always some overflow. These overflows are too low for connection with the sewer. Practically the whole of Upton is drained by a 9in. pipe sewer, which was laid at the cost of the late Mr. Inman. It discharges into a big ditch and so into the Fender. The Upton sewage is for the most part slop-water, but at least 12 of the houses have water closets.

The higher or new portion of Prenton, containing many houses fitted with water-closets, is drained by sewers along Prenton Road West and Storeton Road (to just below Half-way

House) and Woodchurch Road. The sewage is taken across fields to a cesspool where it is limed and passed into a small settling-tank (3ft. by 3ft.) which overflows into a ditch leading to the Prenton Brook and so to the Fender.

At Barnston village, five farms and as many cottages drain into an old drain delivering into a cesspool at the side of the road, with an overflow into a foul ditch running over the slope of a little hill and emptying into Prenton Brook below. The Vicarage and other houses have drains into cesspools apart from this, and with overflows falling another way.

About 10 cottages in Pensby Lane, belonging to the township of Barnston, are drained by 6in. pipes into an open ditch by the roadside. Recently this ditch was piped for about 120 yards, but the pipes terminate in a very foul ditch, which discharges into the Prenton Brook. In this and other ways the Fender is polluted at its source.

At Heswall nearly all the houses (many having water closets) are drained into a common sewer, 12in. and 15in. in diameter, discharging (for tidal purposes) into an intercepting tank about 60ft. long. This tank is cleansed once a year or oftener, if necessary, the deposit drawn therefrom (chiefly sand) being used by farmers. Beyond the intercepting tank the sewer is continued, delivering into the Dee estuary.

Brimstage Brook as it passes through the village of Brimstage receives the drainage, direct or indirect, of most of the village. This brook rises in two little streams at Heswall and Pensby, runs through Brimstage and by the Spital boundary. Below Raby Mere it joins Dibbinsdale Brook. The drainage from some of the farms into these brooks is very foul. However, they appear to be roughly cleaned out from time to time by an employé of the Earl of Shrewsbury. Foul waste water was seen discharging into the stream from a pipe near the Red Cat Inn, and on the other side of the stream, close to the bridge, the drainage from Mr. Roderick Anderson's house was discharged.

Eastham has had a sewer for upwards of 20 years. It is constructed of 9in. stoneware pipes, having a flushing tank at the head and other flushing tanks in its course. It is said to be flushed fortnightly, or in very hot weather weekly. All houses in course of the sewer (practically the whole village) are connected. The sewer discharges into a cesspool, measuring about 12ft. by 12ft. and 6ft. deep, which is cleaned out quarterly. The cesspool overflows into a ditch, and runs along it (an obviously foul stream for two-thirds of a mile), and then through a culvert one-third of a mile in length, till it joins the River Mersey, below the entrance to the Ship Canal. Complaints have been received of an effluvium nuisance, and also that the cattle drink from this ditch. The water-supply (from the West Cheshire Water Works) is often deficient, and sometimes delivered in carts.

At Hooton Green are 10 cottages drained into little cess-pools, the overflows being to a 12in. pipe in a ditch discharging into Dibbinsdale Brook. Contiguous are four large houses (having water-closets) also draining into this 12in. pipe and polluting the Dibbinsdale Brook.

At Childer Thornton an old drain constructed by three or four landowners was relaid deeper and extended by the Sanitary Authority about five years ago. A further extension for about 140 yards has just been undertaken. It has little fall (1 in 260) but two flushing tanks have been put in. This sewer (for it is now a sewer) delivers into two settling-tanks, each measuring 7ft. by 4ft. by 5ft. deep, in the allotment gardens. These tanks are said to be emptied twice a year. A 9in. pipe, about 100 yards long, conducts the overflow therefrom to a ditch, obviously foul, and eventually into the Dibbinsdale Brook.

At Little Sutton a 6in. pipe sewer was laid down Red Lion Lane by the Authority about three years ago. This sewer conveyed the sewage from the Red Lion Inn, the Police Station, and a few cottages, into a ditch. On the other side of the lane is another ditch, and into it the overflow from a cesspool for 8 cottages is discharged. Both ditches discharge into Sutton Brook. Whitby Road has a 12in. sewer terminating in a cesspool 4ft. by 4ft., by 4ft. deep, which is perhaps emptied once a year. The very offensive overflow from this is into a ditch. The remainder of the sewage of the village of Little Sutton (four-fifths) is delivered into a ditch, where it runs for about 270 yards, and is then discharged into Sutton Brook. Complaints have been received that the only water for the cattle to drink is polluted, and of an effluvium nuisance. A few houses contiguous (20 at least) and the Public Schools drain into the railway cutting, and so eventually to Dibbinsdale Brook. The sewage is delivered into the water-course by the side of the line near Little Sutton Station.

At Great Sutton (though the Authority have Urban powers as regards new property) the sanitary accommodation provided is of a primitive type. The house-slops and the contents of the midden-privies are for the most part utilized on the gardens. The open channel by the roadside is obviously foul with drainage from shippens and pig-sties, which assists in the pollution of the Sutton Brook.

The village of Whitby is sewered by a 12in. pipe sewer, continued to Ellesmere Port. Nearly all the houses in the village are connected therewith. The Whitby and Ellesmere Port sewage is discharged into the Manchester Ship Canal.

About 10 cottages and 2 farms drain into a sewer laid by the landlord. At the outfall the sewage forms a foul pond, and is then roughly distributed over meadow land, the effluent being received into Sutton Brook.

At Clatterbridge the Workhouse sewage is treated with alumino-ferric, passed into subsidence tanks and filtered. The

sludge is drawn once or twice a week and the effluent pumped into Brimstage Brook. This apparatus was being worked satisfactorily when last inspected, but from time to time it has not been properly managed and the brook has been polluted. The sewage from the Spital Hospital is also treated with alumino-ferric and allowed to subside. It was intended that the effluent should be passed over land, but when inspected it was apparently passing straight into the Boundary Brook. The Brook was very foul where this sewage was discharged.

About half of the village of Thornton Hough is seweried into a cesspool, with an overflow to Raby Brook. The cesspool is small (say 3 ft. by 3 ft.) and said to be emptied quarterly. The other half of the village is seweried separately to the brook, the sewage not passing through a cess-pool.

At Raby 4 farms and about 6 cottages are drained, with an outfall in Mr. Griffith's field below the village. Here the sewage goes straight into a ditch and after running about 200 yards is discharged into Raby Brook.

At Willaston about 20 houses in Hadlow Road are seweried into a ditch at the side of the lane below Hadlow Road Station. The ditch empties into a stream feeding Dibbinsdale Brook. The bulk of the sewage of Willaston village is discharged into another ditch, which is very foul in consequence. Part of this ditch is piped, and the sewage is carried in pipes under the County road to another ditch, and so to Willaston Brook and Raby Mere.

At Ness, 5 or 6 farms and about 20 cottages are seweried into an old stone culvert that discharges into an open stone channel by the roadside, and so to the estuary of the River Dee. The village of Burton is also drained by a stone culvert and roadside channel to the Dee estuary. Puddington is also drained by a roadside channel leading to the Dee estuary.

Ledsham village and 4 or 5 farms contiguous are seweried by an old stone drain to a ditch running towards Dibbinsdale Brook.

The District is ordinarily well supplied with water from the West Cheshire Water Works. Bidston-with-Ford and Noctorum are supplied from the Birkenhead Water Works. About 43 houses in Frankby and Greasby, 17 in Caldy, and 46 in Moreton and Saughall Massie are supplied from the West Kirby Water Works. Many outlying houses and farms derive their sole supply from shallow wells. At Puddington the only supply is from a pipe delivering into a trough, to which the villagers have to come.

Thus all the Wirral brooks in the Mersey watershed (that is all the brooks in the District except Shotwick Brook) are more or less polluted with sewage; the pollution in the larger brooks being most marked.

The Local Authority report that they know of no pollution from trade-refuse, solid or liquid, and there was none noticed in the course of the inspection undertaken.

Efficient arrangements for the sewerage of the District should be made without delay. A scheme for the drainage of the Fender Valley has already been under the consideration of the Authority. The area it is proposed to deal with by means of this scheme (in all nearly 6,000 acres) comprises the part of Bidston situate south and east of the railway, the village of Moreton, the eastern half of Upton, the whole of Noctorum and Woodchurch, the western watershed of Oxton, the whole of Prenton and Landican, the eastern watershed of Arrowe, the whole of Thingwall, the western watershed of Storeton and the northern watershed of Pensby and Barnston.

Little Sutton also urgently requires sewerage and a scheme could easily be arranged to take in Great Sutton. The Dibbinsdale Valley from Childer Thornton is also in need of sewerage. As regards Eastham, the sewage should be taken to the culvert provided by a properly constructed sewer, instead of running for two-thirds of a mile in an open ditch.

WALLASEY.

Urban District.

Population at Census, 1891—33229.

Estimated population, December 1896—42000.

Houses at Census, 1891—6810.

Houses in December 1896—8400.

Area in acres—3408.

Owing to the situation of this District (its eastern boundary being the River Mersey and its northern boundary being the Irish Sea) it has a direct outlet for its sewers. However a few houses, at the extreme east of the township of Wallasey, in Leasowe Road (including Leasowe Terrace) are too low to drain into any of the town sewers. The houses referred to—about thirty in all—drain into ditches with a very slight fall and these ditches eventually deliver into the Fender. As the houses are none of them provided with water-closets it is only slop-water which is thus carried into the Fender.

The water-supply is from deep wells and is reported pure and abundantly sufficient for present requirements. However the local population increases so rapidly that the Water Committee are considering the provision of a further supply.

The Authority are at present carrying out a comprehensive scheme for the improvement of the sewerage system of the District; and it would be a simple matter while these works are in progress to deepen the contiguous sewer so as to allow the houses in Leasowe Road to drain into it. This should be done, and the houses now draining into the Fender should be resewered and connected with the town system.

HIGHER BEBINGTON.

Urban District.

Population at Census, 1891—1421.

Estimated population, December 1896—1570.

Houses at Census, 1891—276.

Houses in December 1896—295.

Area in acres—699.

To the houses in this District should be added 57 in or near Woodhey, in the Borough of Birkenhead, which drain into the Higher Bebington District sewers. These houses (having an estimated population of 300) are situated just within the Birkenhead boundary, on land which previously formed part of the Higher Bebington District.

The Higher Bebington Urban District pay £5 a year and half the cost of repairs, to the Lower Bebington Urban District, for way-leave on sewer.

The houses on the eastern watershed of Higher Bebington drain through the Lower Bebington District, via Primrose Hill, into a small tank (at Ellen's Rock) which is emptied once a year or less frequently. After passing the tank the sewage is discharged into the Primrose Hill branch of Bromborough Pool. The sewage of houses in the western watershed finds its way by ditches to Brimstage Brook in the Wirral Rural District. None of the sewage is treated in any way.

Of the 295 houses in Higher Bebington, 225 have water closets. The 57 houses in Birkenhead draining into Higher Bebington all have water-closets.

The District has a good water-supply from the West Cheshire Water Works.

The sewage from the eastern watershed should be treated with precipitants at a properly arranged subsidence tank. The houses in the western watershed should be sewered to properly arranged outfall works.

LOWER BEBINGTON.

Urban District.

Population at Census. 1891—5216.

Estimated population, December 1896—5630

Houses at Census, 1891—995.

Houses in December 1896—1073.

Area in acres—1054.

The village of Lower Bebington is sewered direct into Bromborough Pool. The remainder of the district, which is practically New Ferry, is in part sewered direct into Bromborough Pool, and in part to the River Mersey, the outlet

being close to the New Ferry Pier. The whole of Port Sunlight is sewered direct to Bromborough Pool. The sewage is not treated in any way.

Of the 1073 houses in Lower Bebington 987 have water closets. All the houses in the district are on the sewerage system, with the exception of a small number situated on the remote boundary or distant from the sewers.

Water is supplied from the West Cheshire Water Works to every house in the district except four, and these it is stated will be supplied shortly.

The Bromborough Pool is polluted by liquid waste from the Soap Works, Port Sunlight. The polluting liquid is creamy white, making the Pool at low water creamy white. It contains a large amount of insoluble matter—probably lime.

The sewage of the district should be treated with precipitants, and in a subsidence tank of suitable size, or delivered into the estuary below low water mark.

BROMBOROUGH.

Urban District.

Population at Census, 1891—1662.

Estimated population, December 1896—2000.

Houses at Census, 1891—307.

Houses in December 1896—364.

Area in acres—1616.

About 700 of the estimated population of this District are in Bromborough village, about 700 are in Bromborough-Pool Works village, about 100 are in the Magazines village, and the balance in Dibbinsdale and outlying parts.

The streams in this District and neighbourhood are all parts of Bromborough Pool. There is the main stream rising south of Hooton and running north through Dibbinsdale. No tide less than a 17 ft. tide goes beyond the Bromborough mill-dam, where the Old Chester Road crosses by Bromborough Mill Bridge, in Spital township. A 17 ft. tide, or over, opens the gates on the mill-dam and flows in. No tide goes beyond the railway. There is also the north-western stream, running from Mount Pleasant, which is part open and part culverted. The tide goes up this to Primrose Hill, near Bebington Station. The third stream is made up of two branches (respectively from Storeton and Raby) and falls into the main stream at a point beyond the reach of all tides,

The Bromborough-Pool Works village discharges directly into the River Mersey, and the Magazines village discharges its sewage into the Mersey. Bromborough village, however, delivers its sewage into the main sewer which enters the main stream

above the Tile-yard Cottage. The houses along the banks up to the end of Bromborough District have filtering tanks with overflows into the stream, and all the detached houses in the District have filter-beds through which their sewage first flows, except on the Spital side, where settling-tanks only are provided. The main stream, after it passes the New Chester Road bridge receives no more sewage.

The District has a good water-supply from the West Cheshire Water Works.

The Bromborough Urban District Council have already considered the question—How best to treat the Bromborough village sewage? They propose to use it for irrigating land before passing it into the stream. If this be done properly it would doubtless meet the requirements of the case. The remainder of the sewage, as already stated, either passes through filter tanks, or goes into the tidal waters of the Mersey.

Summary as regards the above 3 Urban Districts.

Thus the 3 Urban Districts (Higher Bebington, Lower Bebington, and Bromborough) and a small portion of Bebington Ward, Birkenhead (containing 1789 dwelling-houses, inhabited by about 9500 persons), are drained mainly into Bromborough Pool. It is estimated that the sewage of at least 8000 of this population passes in wholly untreated. As, however, the Pool streams are tidal to Primrose Hill and to above the Bromborough mill-dam, the pollution is almost wholly limited to tidal waters.

Still some nuisance arises therefrom. The large amount of sewage and refuse turned into the Pool is carried up by the flood tide on the banks (which are alluvial) and near the Sunlight Works is a good deal of marsh, which is flooded at spring tide. After the ebb-tide a deposit is left which is very offensive.

HOYLAKE AND WEST KIRBY.

Urban District.

Population at Census, 1891—6545.

Estimated population, December 1896—8865.

Houses at Census, 1891—1299.

Houses in December, 1896—1750.

Area in acres—2019*.

The only watercourse, partly in this district, is the brook known as the Birket. Two dwelling houses ("The Poplars" and "Brookfield") and a row of 4 cottages in Fornall's Lane

*This area does not include the foreshore, which has been lately constituted a part of the district.

are drained into this brook. The Poplars and Brookfield are provided with water-closets ; the drainage from the cottages is mainly slop-water. These and 10 other houses contiguous (undrained) all in the parish of Great Meols, and having a total population of 76 persons, might be suitably drained together. The Surveyor proposed doing this about two years since, but difficulties arose as to obtaining the required land at the outfall—about half an acre.

All the other houses in the district, except about 100 undrained, have water-closets, and the sewage is discharged without treatment into the sea near low water mark. Most of the undrained houses dispose of excreta and slop-water on their gardens.

The district has an excellent supply of water from the West Kirby Water Works (deep wells).

NESTON AND PARKGATE.

Urban District.

Population at Census. 1891—3577.

Estimated population, December 1896—3671.

Houses at Census, 1891—796.

Houses in December 1896—820.

Area in acres—3260

This Urban District consists of Little Neston, Great Neston, and Leighton. The area and population are given as follows :—

			Area in Acres.		Population at Census.
Little Neston	...	...	1214	...	1012
Great Neston	...	...	1405	...	2240
Leighton (including Moorside)			641	..	325

Parkgate is on the east bank of the River Dee, and is situated partly in the township of Great Neston and partly in Leighton.

This District is on the whole well sewered, 599 of the houses being connected with the sewers—that is to say 406 houses in Neston, 98 houses in Parkgate and 95 houses in Little Neston. The number of houses provided with water-closets is 150. At the time the district was visited work for the extension of the sewers at Little Neston was in progress. The Neston sewage is discharged into settling-tanks which overflow into the Snig Lane Brook. Parkgate sewers have a tidal outfall into the estuary of the Dee. The principal portion of the sewage at Little Neston is discharged into the reservoir used by the Denhall Colliery, which has an overflow into the estuary of the Dee.

The Snig Lane Brook, which rises in the district, is polluted not only below the point at which the Neston sewage tanks overflow into it, but along its whole course, contiguous houses and outbuildings and yards being drained into it direct. A sample was taken of the brook near its entrance into the estuary, and submitted for analysis. The County Analyst reports this is "a very bad effluent, smelling strongly of sewage matter, and containing a considerable quantity of sewage matter in suspension." Some years since the water of this brook was the chief water-supply for the district. At present nearly the whole of the district is supplied with water pumped from a well (150ft. deep) in the New Red Sandstone, and distributed by the District Council.

The 221 houses not connected with the sewers are for the most part situated in outlying portions of the district, or else near the estuary of the Dee and draining directly thereinto.

The only works in the district are the Colliery already referred to (where some slack-washing is done) and a Laundry and Cleaning Works lately opened, occupying about $7\frac{1}{2}$ acres of land sloping to the shore of the estuary.

The houses polluting the brook should be properly sewered, and all the sewage should be discharged into the Mersey below low-tide mark or treated efficiently at outfall works.

CHESTER.

Rural District.

Population at Census, 1891—10824.

Estimated population, December 1896—10330.

Houses at Census, 1891—1765.

Houses in December 1896—1870.

Area in acres—35377.

The census population and estimated population, as given above, include the persons in the County Asylum, situated in the parish of Upton, and the persons in the Tarvin Union Workhouse, situated in Great Boughton. However, the estimated population, while including an estimated increase of 643 persons during the $5\frac{3}{4}$ years ending December 1896, is exclusive of 1137 persons enumerated at Elton, Ince, Stanlow and Great Stanney, who at the time of the Census were engaged in the construction of the Manchester Ship Canal. This accounts for the curious fact that in this district during the last $5\frac{3}{4}$ years the population has decreased and the number of dwelling-houses has increased.

The rivers in this Rural District are the River Gowey entering the district near Bridge Trafford from Tarvin Rural District, and running northward to the River Mersey, and the

River Dee in the southern portion of the district. The Thornton Brook and Mill Brook appear to be the chief streams in this district connected with the River Gowey, and the Bache Brook, Caldy Brook, Pulford Brook and Balderston Brook the chief streams connected with the River Dee.

Only a very small proportion of the houses in this district are provided with water-closets, these being mainly in the suburbs of the City of Chester. The actual number is not known.

There are sewers at Eaton, Eccleston, Great Boughton, Christleton, Newton, Upton, Great Saughall and Ince.

At Eaton, having a population of 239 at the Census, and at Eccleston, having a population of 343, are efficient systems of sewers which have been lately completed. The sewage at the outfall in both cases is treated by the Amines process. This process consists in adding well-mixed lime and herring-brine to the sewage as it passes into the settling-tank. After time has been allowed for all the sludge to deposit, the effluent is run off, and except that it contains an appreciable quantity of brine is a fairly pure water. When the County Medical Officer inspected these works they were acting well. At both Eaton and Eccleston the effluent discharges into a ditch and after some distance reaches the River Dee.

At Great Boughton (population at Census, 739) there are upwards of 140 houses. A sewer for about 25 of these houses (not more than 6 having water-closets) conducts the sewage to a tank, which has an overflow pipe discharging by a channel on the fore-shore to the River Dee. The contents of this tank are drawn about once a month. There is an inn also, having a water-closet, draining direct to the Dee. Some 30 houses at Boughton Heath (in this township) drain direct into a ditch, which after about a mile delivers into the Caldy Brook. The brook after about a mile joins the River Dee. About 25 houses, elsewhere, in this township are sewered through tanks, with overflows to a ditch delivering into the Newton Brook, which joins the Dee below the weir. The remaining houses in the township, which are drained at all, drain into ditches, and these (through the Caldy Brook or otherwise) discharge into the River Dee.

Christleton (having at the Census a population of 902 and 190 houses) is a township on high ground, about one-third draining to the River Dee and two-thirds draining to the River Gowey. The sewer for about 40 of the houses in the Dee watershed, has its outfall into a ditch near the drive of Mr. Frank Roberts' house. Of the 40 houses three or four have water-closets. This ditch is partly piped, and its contents find their way to the Caldy Brook and thence to the Dee. In Whitchurch Road are 28 houses by the road-side which are sewered into a tank, with an overflow on a contiguous railway cutting. The Rectory and four houses round are sewered into a tank, with an overflow on land near the Girls' School. Not far off are 10 houses sewered

to a tank, the overflow being used for irrigation. Near Little Heath pit are 20 houses, at present draining into the pit. It is proposed to divert this drainage to a ditch delivering into the Bache Brook. There is some pollution of both the Gowey and the Dee from this township; and considerable need of main drainage.

At Newton-by-Chester (having at the Census a population of 507 and 50 houses) about four-fifths of the township is drained into the City sewers. Many of the houses, unconnected with the City sewers, drain through the Bache Brook or otherwise into the Dee.

Upton (having a census population of 1,313 and 124 houses) is drained in various ways, through the Bache Brook or otherwise to the Dee. Works are now in course of construction for dealing efficiently with the sewage from the Asylum, but only two or three other houses are treating their sewage properly (by subsidence or irrigation). The County Medical Officer of Health noticed a ditch on Mr. Ithel's land which was foul and offensive from the sewage of many houses. About 26 houses in the park deliver their sewage into a brook running through Messrs. Dickson's nurseries.

Great Saughall (having a census population of 699 and 134 houses) has a main sewer for the village, which delivers at the foot of Sea Hill on about an acre of grass-land, where are very rough arrangements for irrigation. The effluent reaching the brook on the other side of this land is not satisfactory. About 50 houses drain into this sewer. The brook joins the River Dee in Flintshire, and about 18 other houses in this township drain into it.

It is important to notice that the pollution of the Dee from Upton and Great Saughall is below Chester.

Mickle Trafford (having a census population of 284 and 52 houses) has no sewerage system, but six houses drain jointly and 13 separately into a ditch, the contents of which find their way into a brook and so to the River Gowey. The drainage from about 22 other houses is also eventually discharged into the River Gowey.

In the township of Ince (population about 300) there is a sewer for about 25 houses belonging to the village that delivers on a meadow, about 9 acres in extent, adjoining the bank of the Manchester Ship Canal. The sewage is discharged into the Canal by a 15in. pipe, which pierces the bank. The meadow seems well fitted for irrigation, and should be thus used, as at present the sewage is a nuisance in the meadow, and is poured without filtration or treatment into the Canal. Ince Hall is drained by a pipe having a good fall, which delivers on land adjoining the Manchester Ship Canal, and belonging to the Canal Company, where the sewage has made a small pond. This sewage should be conducted to a settling-tank, with an overflow to the Canal. Elsewhere in this township 2 farm-houses are drained through

settling-tanks, and 3 cottages are drained direct to a ditch drain, which is partly piped, and ultimately delivers into the River Gowey, about a mile distant.

In parts of the District not referred to in the above statement are farms, houses, cottages, cow-byres, stables, and pigsties draining to contiguous ditches, which pour their contents into brooks, etc. There is thus in this District considerable sewage pollution of rivers and their tributaries. The pollution of the River Dee above the weir (being pollution of water largely used for drinking purposes) is the most important and most requires to be checked. The pollution of the River Gowey and its tributary streams seems to be mainly from part of Christleton and Mickle Trafford. The area of the District in the Dee Watershed is said to be 17280 acres, the census population of which was 6326.

As regards water-supply, Pulford, Eaton, and Eccleston have a good supply from the Wrexham Water Works, while Christleton, Upton, Newton, Blacon-cum-Crabhall, and part of Great Boughton are supplied from the Chester Water Works. In other parts there is good well-water, but elsewhere the water is unsuitable or deficient in quantity. The sole water-supply of many houses draining into cesspools is from contiguous shallow wells. In Great Boughton, in particular, are many new houses supplied in this way.

Thus both the River Dee and the River Gowey and tributary streams are polluted by effluents from imperfectly arranged sewerage systems, and by the sewage from many houses not on any sewerage system. There is much need of improved main drainage throughout the District.

As regards pollution from works or factories, the only instance of this noted is that the Balderston Brook is rendered impure by the waste-liquid discharged therein from the creamery at Balderston.

HOOLE.

Urban District.

Population at Census, 1891—3892.

Estimated population, December 1896—4163.

Houses at Census, 1891—696.

Houses in December 1896—742.

Area in acres—331.

This Urban District is only part of the parish of Hoole ; the remaining part (419 acres, having a population of 174) forms a part of the Chester Rural District.

The population, as given above, includes the population of the Chester Union Workhouse, which is situated in this district.

The only stream in Hoole is the small brook from Piper's Ash, crossing Hoole Park (which is a portion of Flookersbrook) and so through the district to Newton. This brook eventually reaches the River Dee.

Seven hundred and three of the houses in the district are on the sewerage system—699 are provided with water-closets, and in 4 the privies are not yet converted into water-closets. The remaining 39 houses are situated in the outlying portion of the district called Piper's Ash, in which there are no water mains.

Hoole being practically a part of the City of Chester, the Hoole sewers discharge into the Chester main sewers, which enter the River Dee below the weir. The houses in the Piper's Ash portion of the district are provided with midden-privies, the contents of which are from time to time spread on adjacent land. The slop-water (except as regards one house) is drained to cesspools, and 21 have overflow pipes into a ditch in Green Lane (outside the district) which discharges into the Newton Brook, and so into the Dee below the weir.

The water-supply for the larger portion of the district is from the Chester Water Works. The other portion of the district in which there are no water mains (chiefly Piper's Ash) is said to be supplied with spring water.

There is no pollution from any works or factories.

TARVIN.

Rural District.

Population at Census, 1891—12703.

Estimated population, December 1896—12703.

Houses at Census, 1891—2672.

Houses in December 1896—2676.

Area in acres—56873.

This large District includes 58 townships. Till recently there was one Sanitary Inspector for the whole area, but since his retirement the duties of the office have been divided between the Surveyor of Highways for the Northern Division of the District and the Surveyor of Highways for the Southern Division of the District. This arrangement the District Medical Officer of Health considers is admirably adapted to local requirements.

In the northern part of the District are the River Gowy and its tributary streams, Ashton Brook, Salters Brook, Oscroft Brook and Waterless Brook. In the southern part of the District are the Crime Brook falling to the River Gowy, and the River Dee and many tributaries, including the Huntington Brook, Saighton Brook, Aldford Brook, Golborne Brook, Mere Brook, Coddington Brook and Carden Brook.

There are reported to be "sewers of some kind or other" at Ashton, Kelsall, Barrow, Tarvin, Tattenhall, Saighton, Aldford, Churton and Farndon. Very few houses are provided with water-closets—except at Tattenhall, where there are 25, the number is "quite unknown."

The area of the Tarvin Rural District draining to the River Gowey appears to be 23,507 acres, the enumerated population of which is 6,533. The sewage pollution of the River Gowey and its tributary streams, in the Tarvin Rural District, are chiefly as follows:—

In Ashton village about 25 houses are sewered direct to a ditch at the bottom of the village. This ditch (which was foul when inspected on December 16th) delivers into Ashton Brook, a tributary of the Gowey. Six other houses in this village are drained to a cesspool, having an overflow to the same brook.

In the village of Kelsall the sewage (slop-water only) of about 14 houses runs in the road side channel to two tanks, having an overflow to a stream which delivers into Salters Brook and so to the Gowey. A sewer draining five houses and another sewer draining three houses, deliver their contents into a ditch by cottage gardens, and this connects with the same brook. The ditch was very foul when inspected.

At Great Barrow the sewage of about 14 houses (chiefly slop-water) is drained into a ditch by the side of the road leading to Stamford Bridge, whence it shortly reaches the Gowey. Three large houses (Mr. George Oakhill's, Mr. Newport's and Mr. Darlington's) sewered to tanks have overflows into the Mill Brook, just above the bridge. The larger portion of the sewage of Great Barrow village (from 28 houses including a slaughter-house) is delivered by a 9-in. pipe into Holbrook's ditch. The situation of the ditch is in land to the right of the road into the village, before reaching the bridge. This sewage could all be used to irrigate one of Mr. Darlington's fields adjoining. The ditch was exceedingly foul on the day of inspection. The ditch delivers into the Mill Brook, and thus into the Gowey.

The whole of the village of Tarvin (except 8 or 10 houses) is sewered to the Oscroft Brook, a culvert delivering it into the brook close to the bridge. This sewage however is made to pass through a subsidence tank. Several other houses in Tarvin are otherwise drained to the same brook.

In the little village of Oscroft are 13 houses sewered to a tank in a field owned by Mr. Youd, which overflows into a ditch running in the direction of the Gowey. There are also 6 small houses sewered to a tank with an overflow to the Brook.

There are many houses and farm buildings at Tiverton, Beeston and Burwardsley, which drain into the River Gowey or into streams connected with it. A few examples may be given. The Inn at Beeston Castle Station, with stables, pig-sties, &c. are drained to tanks with overflows (passing under the railway) to the Gowey. Mr. Parker, a builder, living near, who keeps a

horse and two cows, occupies a house drained direct to the Gowey. Mr. George Willis, farmer, who on the date of inspection (December 9th.) was keeping 64 cows and 18 pigs, has his premises drained into a tank, with an overflow to the Gowey. There are also several small cottages under the brow of Beeston Hill draining to ditches delivering into the river. Then there are two farms at Beeston:—Mr. John Richardson's (where there were when inspection was made 45 cows and 10 pigs) in which all but the stables drain to a tank and where the overflow is used not very skilfully for irrigating about an acre of land; and Mr. Alfred L. Richardson's (where there were 60 cows and 20 pigs) at which the premises are drained direct into a ditch which delivers into Crime Brook. The stuff put into this ditch was noticed to be very foul. A contiguous farm tenanted by Mrs. S. Challoner, where there are about 50 cows, drains to a very large plot of meadow land, from whence it finds its way to a neighbouring ditch, and so to Crime Brook. On this meadow land there is plenty of room for irrigation if the sewage were properly distributed. Another farm at Beeston, tenanted by Mr. Wood, where at the time of inspection there were 80 cows and 25 pigs, has very unsatisfactory drainage arrangements, though there is no direct evidence that it pollutes the Gowey. The shippings are drained to about 3 acres of land suitable for irrigation, but no attempt is made to distribute the sewage over the land. The slop-water from the house, the pig-sties, &c. are drained into a tank measuring about 18 ft. by 18 ft. and 10 ft. deep, which was found to be full and overflowing into a ditch, part of which had thus been converted into a large cesspit. This cesspit overflowed into the farm pond. The tenant said the tank was about to be fitted with a pump. At present there is considerable effluvium nuisance.

Close to the farm just referred to is a hunting-box, in Tiverton township, and this, with stables and cow-house and 4 or 5 cottages, are sewered into a field in rear. At the outfall are no facilities for irrigation, and a nuisance is created. The drainage appears to be to the Shropshire Union Canal, which is nearer to this land than the River Gowey. Near this, in the same township, is a farm occupied by Mr. Simpson, who keeps 50 cows. The premises are drained into a small cesspool, with a piped overflow to a pond which overflows into the Canal. A farm occupied by Miss Sheen (where are 70 cows), one occupied by Mr. J. T. Aston (where are 33 cows), and one occupied by Mr. Saml. Aston (where are 40 cows), are all drained into subsidence tanks with overflows into the Canal.

At Four Lane Ends, a farm occupied by Mr. Cheers (where are 45 cows), is drained to a tank, and the sewage pumped on about an acre of meadow land. The land drains to a ditch, which is close to the Wettenhall Brook. Mr. Cheers' house and about half his farm is in Tiverton, and consequently

in the Tarvin Rural District, but the remainder of his farm is in the Tarporley Urban District.

The sewage pollution of the River Dee and its tributary streams in the Tarvin Rural District are chiefly as follows :—

At Rowton (population at Census 181, and 36 houses) is a large house with 3 water-closets drained to a tank 4ft. by $2\frac{3}{4}$ ft., with an overflow to a ditch, the contents of which eventually reach the river. Into another ditch 3 farms are drained. Other houses drain to ditches direct or through small cesspools, and so through a tributary to the Dee, the river being from 2 to $2\frac{1}{2}$ miles away.

At Waverton (population at Census 371, and 76 houses) many houses are drained to ditches which discharge into the Huntington Brook, a tributary of the Dee. For instance, not far from the Waverton Station are a block of 6 houses and a block of 3 houses seweried into a road-side ditch, which discharges into this brook. Ten houses near Waverton Church are drained to a tank, which has an overflow to a ditch, and (about a mile further on) discharges into the brook. Four other houses are also seweried into a ditch, which after about 400 yards is connected with a running stream.

A farm in this township, occupied by Mr. John Gregory, drains to a tank which has an overflow to the Shropshire Union Canal. The Rectory, Waverton, drains to a tank, with an overflow into a ditch adjoining Mr. Gregory's farm, and thus reaches the Canal.

At Hatton (population at Census 143, and 24 houses) many farm-houses, farm buildings, and cottages are drained into ditches, which discharge into a small brook running through Hatton Heath to the River Dee, three miles off.

At Saighton (population at Census 362 and 64 houses) also are many farms, &c., drained into ditches, and these discharge into the Saighton Brook, which after running about 3 miles reaches the Dee. For example, a farm occupied by Mr. John Jones, keeping 60 cows, is thus drained. Mr. Davis's farm drains to a settling tank, 4ft. by 3ft., with an overflow to a ditch. A large house known as "The Towers," with water closet accommodation, is drained into a settling-tank, which was found quite full and overflowing into a ditch. The contents of the ditch were exceedingly foul. A few small houses in this township are drained straight to the Saighton Brook.

At Huntington are two farms (each having about 70 cows) at which the houses and farm buildings are drained to a ditch through tanks, which were found full. Some smaller houses are drained to a ditch. The contents of these ditches are carried into the brook, and thence to the Dee, about half a mile distant.

Aldford (population at Census 457 and 89 houses) is for the most part seweried to a subsidence tank, with an overflow through a ditch to the Aldford Brook, which in a few hundred yards joins

the River Dee. The sewage is mainly slop-water, but one of the houses thus sewer'd is an inn with two water-closets. The Aldford Brook is also polluted by receiving the waste water from a creamery near the village. The ditch by which this is conveyed was, when inspected, very foul, the black mud it contained being thickly covered with slime. Two cottages also drain into this ditch, and 6 houses, - at 3 of which a few cows are kept.

At Tattenhall (population at Census 975 and 219 houses) is a stream which as it proceeds westward is known as the Golborne Brook. Into this many houses in the village are sewer'd, including 25 provided with water-closets and a slaughter-house. There are two outfalls, one being close to the bridge. Within about one hundred yards of the bridge is a creamery which discharges its waste water, closets, overflow from piggeries, &c., into the brook. Other houses drain their slop-water, and in some instances their midden-privies, to ditches which discharge into the brook. Several schemes for dealing with the sewage of Tattenhall have been suggested and have had the consideration of the District Council, but owing to the difficulty of obtaining suitable land at reasonable cost, &c., nothing up to the present has been done.

Churton (population at Census 317 and 81 houses) is drained on the east side by a roadside channel to the Aldford Brook, and the other side drains by a ditch to a field pond. The slop-water of 16 houses thus reaches the brook, and the overflow from the sewage-tank of a large farm.

Farndon (population at Census 560 and 124 houses) is on the banks of the Dee, opposite Holt to which it is connected by a bridge. Forty houses in the village are sewer'd into the river, the outfall being just below the bridge. Twenty of the houses on the other side of the village are sewer'd to a ditch which joins the Dee a little way off, above the bridge. Three large houses having water-closets drain to cesspools which overflow to the river. A few other small houses and cottages are drained directly into the river. The waste water from a brewery is also conducted to a ditch.

Shocklach (population 316 and 65 houses) drains on one side to the Dee and on the other to the Aldford Brook, and much slop-water, and drainage from cow-sheds and pig-sties is conducted to ditches which overflow into the brook or directly into the river.

At Horton (population 96 and 22 houses) also the houses and farm buildings are mostly drained into contiguous ditches, which not being regularly cleansed discharge their contents after heavy rains into Carden Brook.

Tilston (population 305 and 80 houses) is conveniently situated for draining into the Carden Brook, and thus to the Dee. Most of these houses appear to be drained directly or indirectly to this brook. The houses draining thus include a

slaughter-house. The ditches which in many instances conduct the slop-water and farm drainage to the brook are not regularly cleaned out.

There is thus in Tarvin Rural District much sewage-pollution of the River Gowey and the River Dee and their tributaries; and although there are sewers in many villages, there is at present no single instance in which the sewage is treated at the outfall by the Local Authority. It will be noted also that there are a few instances in which sewage is conducted into the Shropshire Union Canal.

The water-supply of the District is from shallow wells or surface springs, except at Aldford where water from the Wrexham Water Works is supplied by mains. In some instances the waters of the Dee or Gowey were in use for household purposes other than for drinking, and occasionally for drinking.

There is much need of increasing the main drainage in this District, and of improving that which exists.

There is no pollution from works or factories except that at Aldford and Tattenhall the brooks are polluted by creameries, and that at Farndon there is indirect pollution of the River Dee from a brewery.

It is not necessary to point out that the River Dee is known to be grossly polluted with sewage, waste chemicals, &c., before it reaches Tarvin Rural District or Chester Rural District.

TARPORLEY.

Urban District.

Population at Census, 1891—2702.

Estimated population, December, 1896—2720.

Houses at Census, 1891—617.

Houses in December, 1896—620.

Area in acres—6194.

This Urban District consists of Rushton, Eaton, Utkinton and Tarporley. The area, population and number of houses are given as follows :—

			Area in Acres.	Population at Census.	Houses at Census.
Rushton	...	...	1797	...	324 ... 76
Eaton	...	...	1344	...	461 ... 97
Utkinton (including Cotebrook)			1889	...	498 ... 107
Tarporley (including Rhuddall Heath)	...		1164	...	1419 ... 337

The population and number of houses in this District have increased very slightly since the Census.

The streams in this District are a brook to the south of Rhuddall Heath, which runs eastward, and is continued as the Wettenhall Brook, and a brook running southward between Eaton and Rushton which joins the above.

Nearly all the houses in Rushton and Eaton drain into cesspools and ditches, the contents of the ditches finding their way ultimately to the southward brook. The sewage from Utkinton and a small part from Rushton and Eaton flows to the brook running into Oulton Mill Pool near the boundary of Northwich Rural District.

Till lately the whole of the sewage from Tarporley ward or township was discharged into the brook direct. This sewage, though mainly consisting of slop-water, includes the soil from a few water-closets—in all about 12. The Local Authority, having been several times threatened with an injunction to prevent them from continuing to pollute the brook, it was decided to deal with the sewage, and with this object a special rate was levied in 1893. Mr. Bancroft, C.E., of Manchester, was consulted, and he prepared plans for a scheme of main drainage, and so far has been employed to carry out the work. It is proposed to take the sewage along Rhuddall Heath to an acre of land to be purchased, which is about half a mile from the town, and there treat it as the sewage is treated at Knutsford.* The sewage, as delivered at the outfall, is to be passed through a chamber containing alumino-ferric, with two settling-tanks, each measuring 26 feet by 22 feet, to be used alternatively. From these tanks the sludge will be pumped and left till it is of the consistence of clay, when it will be carted to neighbouring farms. From the settling-tanks the sewage (minus the sludge) will be passed into the filtering-tanks, each measuring 42 feet by 42 feet, to be used alternatively. The effluent will then be run into a ditch and thence to the brook.

The rate levied (1s. 9d. in the £ for the year ending March 25th, 1894, and 2s. in the £ since) had up to March 25th, 1897, realised £1320 16s. 4d., and of this sum £708 8s. 10d. had been expended, leaving £612 7s. 6d. in hand. Part of the main sewer has been laid, and to complete the laying of the sewer, pay for the land required and construct the outfall works, it is estimated that about £1000 more than the sum in hand will be required. The arrangements for purchase of the land are practically completed. It is not proposed to take land for irrigation.

As a temporary measure the sewage from Tarporley ward has been conducted to a settling-tank, in size about 36ft. by 24ft. As it flows in, the sewage is intended to pass through a cage containing alumino-ferric, but at the time inspected it did not touch the chemical. The contents of this temporary settling-tank were found very offensive. No sludge had been drawn for a long time, and there was no proper arrangement for drawing it periodically. The effluent discharged from this tank

*A deputation was sent from Tarporley to Knutsford, and reported in favour of the works in operation there.

and running to the brook did not appear to differ in any way from ordinary sewage.

There are no works or factories in the District polluting either of the streams directly or indirectly.

The Liverpool mains furnish an excellent supply of water for the District, and up to the present 224 houses have been connected. The District used to be entirely supplied with shallow wells, and there are many of these yet in use.

MALPAS.

Rural District.

Population at Census, 1891—4624.

Estimated population, December 1896—4650.

Houses at Census, 1891—1003.

Houses in December 1896—1010.

Area in acres—21408

The portion of the parish of Threapwood which till lately belonged to Flintshire, was in autumn, 1896, transferred to the Administrative County of Chester; and since this time the whole of such parish has been included in Malpas Rural District.

The population of the whole of the parish of Threapwood is 306, the number of houses is 84, and the area in acres is 248.

The water-courses of the District are Cuddington Brook, Bradley Brook (running by the town of Malpas), Wych Brook (at the southern boundary of the District,) and Bickley Brook, which discharges into Bar Mere.

A large proportion of this District (proximately about 14243 acres, 757 houses and 3441 of the population) is in the Dee watershed. The eastern parishes—Wirswall, Marbury-with-Quoisley, Norbury and Bickley--being in the watershed of the River Weaver.

The Bickley Brook is polluted by the Egerton Hall Farm and other contiguous houses which drain into it directly or indirectly; and the drainage of houses at or near Marbury finds its way to a little stream, a tributary of the River Weaver.

As regards the Dee watershed there is sewage pollution of streams at Edge, Malpas (town), Cuddington Heath and Threapwood.

Malpas Station and nine houses contiguous in the township of Edge, with 2 inns in the township of Hampton, drain into a local brook which helps to feed the Aldford Brook. The station has 3 water-closets which discharge into a cesspool having an overflow to a stream which falls into this brook. There is also a cattle-market here, drained into a ditch discharging into the brook. This ditch was very foul when inspected.

The town of Malpas (having a Census population of 1164 and 254 houses) stands on an eminence, and is sewer'd to 3 outfalls. These may be distinguished as Nos. 1, 2 and 3. At No. 1, where about a quarter of the sewage is dealt with, is a tank measuring about 15ft. by 10ft., which has lately been altered to take in alumino-ferric. From September to the end of the year about 3 tons of this precipitant had been used. The sludge is put on farm land adjoining. The sewage, minus the sludge, is discharged into a stream which is a tributary of the Wych Brook. There is land available for irrigation. At No. 2 outfall are two alternatively used irrigation grounds—one about two acres in area, the other about $1\frac{1}{2}$ acres. Here about half the Malpas town sewage is dealt with, including that from 3 slaughter-houses. The sewage is first received into a small chamber and then into a settling-tank measuring about 15ft. by 10ft. When the land is not fit to take the sewage it is proposed to add alumino-ferric to the sewage as a precipitant—about half a ton had been used up to the end of the year. The sludge was not being drawn, and the land was fallow; so that sewage was going to a ditch and thus to a stream a tributary of the Wych Brook. No. 3 outfall receives rather less than a quarter of the sewage. There is a tank here (the same size as the other tanks) which has been lately altered to take alumino-ferric. From September to the end of the year about a ton of the precipitant had been used. No alumino-ferric was being used on the day of inspection, and the sewage was going along a contiguous ditch (through a cattle-drinking pond) for about 600 yards, to a stream between Chorlton and Cuddington. Most of the houses in the town of Malpas have midden-privies, the contents of which are emptied from time to time and distributed over land sloping to the streams. There are, however, 20 water closets connected with the sewer delivering at No. 1 outfall, 36 water-closets on the sewer delivering at No. 2 outfall, 6 water-closets on the sewer delivering at No. 3 outfall, and 5 sewer'd to a tank.

Cuddington Heath, a hamlet west of Malpas town, is drained to the brook which flows through it. The drainage is for the most part slop-water and from pig-sties. A sewage tank, built for the accommodation of a private house, was full and had been overflowing.

In the parish of Threapwood is a hamlet of about a dozen houses built on one bank of the Wych Brook. The bank is steep and the houses close to the water. The slops, the drainage of pig-sties and much of the house-refuse goes direct into the brook. Some very filthy cesspool privies are so near the running water that soakage therefrom probably pollutes it. The most marked instance of direct pollution of a stream from human excrement was noted at a public-house at one end of this group of dwellings. When inspected this public-house was full of customers, and on a rocky slope in the rear, which formed the

yard, was the privy provided for the accommodation of the tenant and his guests. Under the seat was an inclined plain, and the faecal matter and urine were thus conveyed into the waters of the Wych Brook two or three yards below.

There is thus considerable direct and indirect pollution of brooks and streams in this Rural District, and much of it might be easily prevented.

As regards water the supply for Malpas town is from the Liverpool mains, but it is intermittent, being turned off at night. The remainder of the District is supplied chiefly by pump-wells. There are a few springs. At Chorlton, the public well which regularly supplies four or five houses, is liable to be contaminated by water from the highway. At Hampton, is a dip-well by the roadside (supplying two or three cottages) occasionally contaminated by surface water and cattle. At Norbury also is a public well (supplying seven houses) open to cattle and surface contamination. Efficient protection could be easily given to these supplies. At Dawbrook the water-supply of several cottages is a shallow well liable to surface pollution.

There appears to be no pollution from works or factories.

RUNCORN.

Portion of Rural District.

Population at Census, 1891—22467.

Estimated population, December 1896—24178.

Houses at Census, 1891—4242.

Houses in December 1896—4551.

Area in acres—45923.

All of the Runcorn Rural District may be regarded as outside the area under the jurisdiction of the Mersey and Irwell Joint Watershed Committee, except the lately added part which until December, 1894, formed the Cheshire portion of the Warrington Rural District. This lately added part includes Grappenhall, Thelwall and part of Latchford—the whole area of this corner of Runcorn Rural District being 3397 acres.

The River Weaver runs through the District. The principal named brooks are as follows:—Birch Brook, Gale Brook, Budworth Brook, Arley Brook, Crowley Brook, Cogshall Brook, Whitley Brook, Norcot Brook, Walton Brook, Acton Grange Brook, Keckwick Brook, Woods Row Brook, Preston Brook, Iron-dish Brook, Hornsmill Brook (known also as Holpool Gutter), Peek Mill Brook, Halton Brook, Moor's Brook, and Kingsley Brook.

The northern part of this District is for the most part drained direct into the River Mersey. The principal sewers are as follows:—

1. The Stockton Heath covered sewer (forming part of the Sewerage Works of Stockton and Wilderspool, in the parish of Appleton) conveys the sewage from 508 houses and delivers into the River Mersey (by syphon under the Manchester Ship Canal) above Twenty-steps Bridge.
2. The Walton Brook open sewer (in Walton Inferior) conveys the sewage from 44 houses. This used to discharge into the River Mersey, but was severed by the Manchester Ship Canal Company just below the water-mill, and discharged into a cesspool, the effluent passing into the Canal.
3. The Acton Grange Brook open sewer conveys the sewage from 27 houses in Walton Superior and Moore. This used to discharge into the River Mersey, but was severed by the Manchester Ship Canal Company for discharge into a cesspool, which they made, the effluent passing into the Canal.
4. Sewers known as the Moss Lane Watercourse (partially covered) and the Runcorn Road Watercourse, Moore, convey the sewage of 32 houses. These used to discharge into the River Mersey, but were severed by the Manchester Ship Canal Company, and are now discharged by an intercepting drain into the Keckwick Brook at Randles Sluice, and thence into the Manchester Ship Canal.
5. The Keckwick Brook open sewer conveys the sewage from 65 houses. This used to discharge into the River Mersey, but was severed by the Manchester Ship Canal Company. The sewage is now delivered into the brook, and so to the Canal.
6. The Halton Brook open sewer conveys the sewage from 32 houses and a tannery. This used to discharge into the Mersey and Irwell Canal, but was severed by the Manchester Ship Canal Company and discharged into a cesspool, the effluent passing into the Canal.
7. Woods Row Brook sewer (in part open) conveys the sewage from 62 houses. This used to discharge into the Mersey and Irwell Canal, but was severed by the Manchester Ship Canal Company and discharged into a cesspool, the effluent passing into the Canal.
8. The Folly Brook sewer (covered) conveys the sewage of 44 houses. This used to discharge into the River Mersey, but was severed by the Manchester Ship Canal Company, and is now discharged into the river (by syphon under the Ship Canal) at Folly Brook, with a portion of the sewage from Runcorn Urban District.
9. A sewer discharging into the Weston Canal conveys the sewage of 26 houses. This sewer has not been interfered with by the Manchester Ship Canal Company.

10. The sewers delivering to the Sea Flats sewer outfall, Dun's Creek outfall, and several outfalls on the Quay in Frodsham and in the township of Sutton, convey the sewage of 541 houses and discharge into the River Weaver. The sewers to the Sea Flats outfall, conveying the sewage of Frodsham and Frodsham Lordship, used to be discharged into large settling-tanks on the Sea Flats, where the sludge was allowed to deposit and removed, the effluent only being discharged into the River Weaver. These tanks remain, but form no part of the Frodsham sewerage system. The Manchester Ship Canal Company constructed an 18-in. pipe sewer, with a tidal valve from the sewer leading to the said settling tanks, so as to discharge the sewage therefrom direct into the Weaver estuary. The place where the outfall sewer discharges into Dun's Creek is about 100 yards from where the Creek joins the River Weaver. Four houses in Frodsham are seweried to a stream known as the town ditch. The drains of these houses could be easily severed and connected with the town sewers.

A stream known as the Iron-dish Brook, forming the boundary between Helsby and Frodsham Lordship, is much polluted by the sewage from upwards of 40 houses in Helsby drained into a ditch which discharges into this brook. Both ditch and brook were very foul when inspected. This brook ultimately empties into the Holpool Gutter or on the contiguous Sea Flats. Most of the other houses in Helsby drain, mainly by 2 outfalls, into an open water-course, which is very foul. Drains and ditches apparently intended originally to convey surface water only, have, in a great many instances, been used to convey sewage, and as these are nearly flat and not systematically cleansed they are very foul. The many water-courses and ditches are connected one with another, and the sewage they receive deposits in them or overflows on the marsh lands or finds its way to the Holpool Gutter, nearly 2 miles distant. In all there are upwards of 250 houses in Helsby, but very few have w.c.'s.

In the parish of Kingsley (having a Census population of 1111 and 245 houses) there is considerable pollution of the local stream, Kingsley Brook, which rises at Wandley Well and delivers through Crowton mill-pool into the River Weaver. Nearly half the houses are seweried directly or indirectly into Kingsley Brook. Following the brook up for some distance, shippions and stable middens were seen draining into it, and tins and pot-sherds and solid refuse of various kinds were being carried along by the force of the current. The water in the mill-pond was distinctly polluted. In the village of Kingsley are 3 supply-pipes, giving the inhabitants water for domestic purposes, but the supply is apparently not first-class water.

Great Budworth (having a Census population of 510 and 111 houses) is drained by three outfalls to Budworth Brook,

which falls into Budworth Mere. The sewage from twelve houses, including the schools, is turned into a ditch, which in about three quarters of a mile discharges into the brook. The contents of this ditch were noticed to be very foul. The rest of the sewage is more or less roughly distributed over grass land. There are only six water-closets. Great Budworth has a good water-supply. Water from a spring at Aston is forced by ram to a receiving tank. There is also a spring fountain running continuously, and five stand-pipes for the village.

Between Whitley and Seven Oaks are ten houses drained by a common sewer to a pond on the road-side. This pond also receives the drainage of a shippon, stable and piggery. Another contiguous pond, connected to this with pipes, receives the drainage of one house and farm-yard. Both ponds are very foul, and one flows into a ditch which discharges into a brook—a tributary of the Cogshall Brook. These houses have a water supply from two pump wells.

At Lower Stratton, upwards of twenty houses are drained by a common sewer to a ditch which discharges into the Crowley Brook. This ditch was very foul when inspected. The water supply from these houses is from four pump wells.

Between Stretton and Higher Whitley are 20 houses drained by a common sewer to a ditch which discharges into the Norcot Brook. The only supply for these houses is from a roadside pump, the water from which is bad, and from a pump at a farm, the water from which is satisfactory. Norcot Brook is also polluted by receiving the drainage of 12 other houses. Norcot Brook discharges into a millpond and so on to the Whitley Brook, at the border of Lower Whitley and Newton-by-Daresbury. When inspected here, the Brook was obviously polluted. Whitley Brook is a tributary of Cogshall Brook.

All the higher part of Preston-on-the-Hill is drained to Preston Brook. At Barker's Hollow the pollution from sewage is apparent. At the boundary between Norton and Preston-on-the-Hill (near Preston Warehouses) the refuse liquor from Preston tannery and slight additions of sewage from Norton join the Brook. At this point the stream was very foul when inspected.

Portions of Daresbury, Norton and Halton are sewered into the Bridgewater Canal. Prior to the construction of this Canal this sewage appears to have been discharged into the River Mersey.

A very large proportion of the brooks and streams in this district are thus polluted by sewage from sewerage systems or separate houses. Indeed, in many instances, water-courses have been converted into sewers. The pollution has probably considerably increased since the Manchester Ship Canal was interposed between the river Mersey and the townships draining into it.

The works or factories noted or reported as polluting streams, are chemical works at Weston, bone-boiling works at Sutton, another at Clifton, and two at Frodsham, a blood-drying works at Clifton, tanneries at Preston-on-the-Hill, Halton and Frodsham, and fish-oil extracting works at Clifton.

RUNCORN.

Urban District.

Population at Census, 1891—20050.

Estimated population, December 1896—18500.

Houses at Census, 1891—3846.

Houses in December 1896—3861.

Area in acres—1179.

The population of this District, as estimated is 1550 less than the population enumerated at the date of the Census. That is to say, owing to the depressed state of trade locally, a much larger number of houses were unoccupied in 1896 than in 1891.

The sewage of Runcorn is discharged into the River Mersey estuary at 2 points. An intercepting sewer takes the main portion of the sewage of the District, and delivers it into the River (by siphon under the Manchester Ship Canal) at "No Man's Land." Nearly the whole of Higher Runcorn is drained by a main sewer, passing down Percival Lane, and delivering into the River (by siphon under the Ship Canal) at Folly Brook. Of the whole number of houses in the District only 600 are provided with water-closets.

A few houses in or near Halton Road (about 27 in all) are not on the sewerage system.

Three tanneries (Ockleston's, Highfield and Royal Oak tanneries) drain into the Ship Canal.

The "big pool" at Runcorn is fouled by about 5 houses, which drain into it. This is a very insanitary arrangement. The pool delivers into the Bridgewater Canal.

The water-supply for the Urban District is good, and derived from a well over 200 feet deep.

BUCKLOW.

Portion of Rural District

Population at Census, 1891—3117.

Estimated population, December 1896—3298.

Houses at Census, 1891—618.

Houses in December 1896—624.

Area in acres—17186.

The portion of the Bucklow Rural District, which is outside the area under the jurisdiction of the Mersey and Irwell Joint Watershed Committee, includes 8 townships, viz. :—Aston-by-Budworth, High Leigh, Peover Inferior, Peover Superior, Pickmere, Plumley, Tabley Inferior, and Tabley Superior.

The brooks in this portion of Bucklow Rural District are Peover Brook (in Plumley, Tabley Inferior, Peover Superior, and Peover Inferior), Waterless Brook (in Tabley Superior), and Birch Brook—overflow from Arley Pool (in Aston-by-Budworth). These are all in the River Weaver watershed.

There is no main sewer in any of these townships. Each house of block or houses is drained into a cesspool, and where overflows exist these are delivered (if possible) on land for filtration.

Of the 624 houses in the 8 townships, 591 are known to be accommodated with privies only. There are in all only 17 known to have water-closets—10 being in High Leigh, 4 in Plumley, and 3 in Tabley Superior.

The Surveyor reports that there is no direct pollution of streams, such sewage as reaches the brooks being “clarified sewage.” However, he will not deny that as regards most of the streams there are instances of overflows (from cesspools) which discharge into such streams or their tributary ditches. There appears to be no pollution of streams by works or factories.

There is no system of water-supply in any of the 8 townships. The supply is from underground soft-water tanks, open wells, and springs.

NORTHWICH. Rural District.

Population at Census, 1891—20923.

Estimated population December 1896—24000.

Houses at Census, 1891—4251.

Houses in December 1896—4800.

Area in acres—53931.

This District includes 33 townships and portions of 5 other townships.

The rivers in the district are the Weaver, the Dane, and the Wheelock, and many tributary streams. The chief of the streams in the north of the district are the Cliff Brook, Cogshall Brook, Marbury Brook, Wincham Brook, Smoker Brook, Wade Brook, Crow Brook and Bradshaw's Brook. The chief of the streams in the south are the Shawslane Brook, Darleylane Brook, Chesterlane Brook, Ash Brook, the River Croco and Sanderson's Brook.

The townships in which sewerage systems exist are Weaverham, Barnton, Winnington, Wincham and Marston, Lostock Gralam, Hartford, Davenham and Moulton.

At Weaverham the sewage from 237 houses (estimated population 1066) is dealt with. Only 2 of these houses have water-closets, all the others being provided with excreta-pails. The sewage is received into two subsidence tanks (in a large field) each measuring 36 ft. by 7 ft.; but no precipitant is used and the sludge is not regularly drawn. The overflow, which is practically crude sewage, is conducted to a ditch along which it flows for about half-a-mile to the River Weaver. The ditch on inspection was very foul, and the sewage it conveys undoubtedly pollutes the river. There is abundance of meadow land adjoining the tanks which might be made use of for irrigation purposes.

Part of Barnton, that is to say 327 houses (estimated population 1635), is seweried to two subsidence tanks near the River Weaver. The tanks measure 60 ft. by 8 ft., no precipitant is used, and the overflow (practically crude sewage) is discharged direct into the river. The houses seweried are all provided with excreta-pails. This sewage should be properly treated, as there is no doubt that at present it pollutes the river. Efficient sewerering and outfall works for another part of Barnton, containing upwards of 200 houses, are matters now under consideration.

At the Winnington Park Estate, in the township of Winnington, there are, according to the Rural District Surveyor, between 250 and 300 houses (estimated population 1500) seweried direct into the River Weaver. The sewer appears to have been laid and maintained by the owners of the estate, and not even inspected by the officer of the District Council. The houses seweried are provided with excreta-pails, still the sewage constitutes a pollution of the river and should be efficiently treated.

At Wincham and Marston is a sewer to which 170 houses (estimated population 850) are connected. There is only one of these houses having a W.C., the others being provided with excreta-pails. The sewage is conducted, without treatment, to the Wincham Brook, a tributary of the River Weaver. The sewer has been laid through land subject to subsidence, and subsidence having taken place the brine flows in freely. A sample of the sewage taken at the outfall and submitted to the County Analyst for analysis, is reported on as "a solution of brine and a good effluent, but not fit to run upon land owing to the excess of salt."

Part of the township of Lostock Gralam, where the dwelling-house accommodation has much increased in recent years, is seweried to outfall works close to a stream known as the Crantage Brook, a tributary of the River Weaver. There are in all 279 houses (estimated population 1,395) connected to the sewers. Very few of these houses have W.C.'s, 270 having excreta-pails. The sewage is received into subsidence tanks, first passing through a little chamber, in which it is mixed with alumino-ferric, as a precipitant. The sludge is drawn from time to time and the overflow made to pass through a filter of coarse

gravel. No land for irrigation is available at this outfall, and precipitation and filtration appear to be the best way of dealing with the sewage. Of course the quality of the effluent will depend upon a sufficient quantity of precipitant being used and maintaining the filter in good working condition. On the whole, when inspected, the outfall works appeared to be satisfactory. A sample of the effluent discharged into the brook was taken and submitted to the County Analyst for analysis, and he reports it to be a fairly good effluent.

Part of the township of Hartford is sewered, 92 houses (estimated population 460) being connected to the sewers. Ten of these houses are provided with water-closets, the remainder have privies only. At the outfall the sewage is received into a subsidence tank about 8ft. by 5ft., and the overflow is used for the irrigation of about 10 acres of grass land. No precipitant was being used when the outfall was inspected. There was a chain pump in connection with the tank, but it was not in use, and the sludge was drawn at long intervals with a scoop and put on adjoining land. Though not much appeared to be removed from the sewage in the tank, the irrigation was being fairly well conducted, and the drainage of the irrigated land which is discharged into a tributary of the Weaver is probably not polluting the river appreciably.

Part of the township of Davenham is sewered, 136 houses (estimated population 612) being connected to the sewers. Twelve of these houses have water-closets, the remainder being provided with excreta-pails. At the outfall the sewage is received into a subsidence tank, the overflow being used for the irrigation of an acre and a quarter of under-drained land. When inspected this little irrigation ground had been of late somewhat neglected, and the effluent discharged into a tributary of the River Dane was not quite satisfactory. The outfall-works had just been placed in charge of another man and he promises greater attention. If the sludge be regularly drawn and a little precipitant used as required, and the ground be properly managed, the works should prove quite efficient.

Part of the township of Moulton is sewered, 250 houses (estimated population 1170) being connected to the sewers. All the houses are provided with excreta-pails. The sewage at the outfall is received into a subsidence tank, the overflow being used for the irrigation of an acre of under-drained land. The sludge appears to be properly drawn, and the land (planted with vegetables) appeared to be in fair condition, but the catchpit showing the effluent as delivered into the River Dane, was foul and needed cleaning out at the date of inspection.

It thus appears that there is pollution of the River Weaver from Weaverham, Barnton and Winnington, and probably slight occasional pollution of tributaries of the River Dane from Davenham and Moulton. At the three first-named places really efficient outfall works should be provided without delay. At

Davenham and Moulton a little more careful management is all that is needed. The Lostock Gralam works require much supervision, or they will not continue efficient, and in course of time the filtering area and possibly the area given for subsidence will have to be increased.

At Rudheath, and elsewhere also, a small number of houses have been seweried to land, where some improvement of the effluent is effected.

Beside pollution by effluents at sewerage outfalls, there is pollution of rivers, brooks and streams from numberless houses, farm-buildings, stables and piggeries, drained into contiguous ditches and thus into water-courses, directly or indirectly. Many instances of pollution of rivers, &c., in this manner are given in the section of this Report referring to the adjoining Rural District of Tarvin ; the same kind of pollution is going on in the Rural District of Northwich. In various parts too there are villages where a good drainage system is needed.

As regards water there is a public supply at Delamere, Oakmere, Cuddington, Weaverham, Crowton, Acton, Barnton, Sandiway, Hartford, Marston, Wincham, Lostock Gralam, Anderton, Leftwich, Marton, Darnhall, Wimboldsley, Clive, Moulton, Eaton, Davenham, Stanthorne, Kinderton, and for part of Rudheath. At Winnington Park there is a good supply to all houses from private works belonging to the owners.

The pail system for removal of excreta is in use at Weaverham, Barnton, Marston, Wincham, Lostock Gralam, Anderton, Leftwich, Winnington, Moulton and Davenham.

As there are a large number of Salt Works on the banks of the Weaver, and cinders and refuse from Salt and Alkali Works are used generally in maintaining the banks of the river, there must be some amount of pollution from solids in this way. The Local Authority do not know of any material pollution due to sludging of mill-lodges, but there is doubtless more or less pollution caused in this manner. From the numerous Salt Works and Brine-pumping Stations, brine is constantly finding its way into the rivers and streams. There is also some pollution from the Chemical Works of Messrs. Brunner, Mond & Co., Limited, at Winnington, and Messrs. Bowman, Thompson & Co. Limited, and Messrs. Davis's Chlorine Process Co., Limited, at Lostock Gralam.

Complaints have been made of pollution of the Cuddington Brook from a creamery at Cuddington, but the District Medical Officer of Health has not been able to detect any.

NORTHWICH.

Urban District.

Population at Census, 1891—14,914.

Estimated population, December 1896—17,250.

Houses at Census, 1891—2,942.

Houses in December 1896—3,902.

Area in acres—1,758.

This District includes the parishes of Witton-cum-Twam-brooks (including a formerly detached part of the parish of Left-wich), Northwich, and Castle Northwich, and parts of the parishes of Hartford, Winnington and Leftwich.

The rivers in the district are the River Weaver and the River Dane; the tributary streams are the Witton Brook, Wade Brook, Cranage Brook, and Shurlach Brook.

Only 368 of the houses in the district have water-closets; others are provided with excreta-pails; others have cesspools or midden-privies.

All the houses in the district, with the exception of about 178, are on the sewerage system.

That part of the town extending from Warrington Road to Wade Brook bridge, including Penny Lane (about one fifth of the district), is sewered to outfall works, near the Wade Brook. The entire area of the land occupied at these works (including site of keeper's cottage and garden) is two acres. The sewage is delivered by an 18-inch pipe into a tank 10 $\frac{1}{4}$ feet by 8 feet, which has a storm overflow to land. Near this are two settling tanks, each 60 feet by 15 feet, used alternatively. They are 4 feet deep at one end and 7 $\frac{3}{4}$ feet deep at the other, and are divided into three parts by low dividing walls. After settling, the sewage is delivered into two cisterns, each 4 feet by 4 feet, and nearly 4 feet deep. These are at the upper part of the irrigation ground, and deliver the sewage to flat-bottomed, stone-ware carriers, about 1 foot wide, and so to the land, which is arranged in terraces. The land is used for vegetables and grass, and a small part for osiers. The effluent on the day the works were inspected was being delivered by three pipes into the Wade Brook. A sample from each of these was sent to the County Analyst for analysis, and he reports them to be first-class effluents.

The sewage from the west portion of Witton ward is delivered direct by an 18-inch pipe into the River Dane, just below the weir. This is the sewage from about a fifth of the population of the district.

The sewage from Queen Street and Jubilee Street, about 70 houses (population say 300), is delivered direct, by a 9-inch pipe into the River Weaver, at the back of Messrs. Cleghorn and Wilkinson's works. The sewage from London Road, and many small streets in connection therewith, about 200 houses (population say 900), is also delivered direct into the River Weaver

The sewage being discharged at both these outfalls, on the day of inspection, looked very bad.

The sewage from Mond's Park, an area including over 200 houses, many of which have water-closets, is conducted to a tank in a locked enclosure of wood paling, near the Weaver, above the Barrow Locks. This tank was constructed about five years ago and has very seldom been emptied.* On the day the district was inspected there was a pond of sewage contiguous to the tank, formed apparently by leakage from the sewer on its way to the tank. Both tank and pond are situated in the Rural District of Northwich, but the tank overflow is discharged into the River Weaver in the Urban District.

The sewage from Castle ward (about 500 houses) is conducted to a pair of settling-tanks, measuring about $9\frac{1}{2}$ ft. by $4\frac{1}{2}$ ft. each, near the river. There appears to be no arrangement for having the sludge deposited drawn, and the overflow is taken by a closed wooden conduit to the River Weaver. The covering to the tanks could not be removed, but the overflow obviously fouled the river for some distance. As it was discharged below the river level a sample could not be taken.

The sewage from Boundary Street (about 200 houses) is delivered direct into the River Weaver, at the bottom of Boundary Street, just below the town bridge.

The Shurlach Brook, a little stream joining Wade Brook (near the old boiler-house lately used as an isolation hospital), is polluted by the overflow from a cesspool serving 10 cottages. The cesspool is in the Northwich Rural District, but the sewage, which was very foul when noticed, joins the brook in the Urban District.

It is thus apparent that the sewers from about one-fifth of the houses in the District have outfall works which are fairly efficient.

All the information that could be gathered as to the sewers and outfalls for the remainder of the District, is recorded above. Unless the number of the houses in the District has been over estimated, the manner of sewerage a great many has yet to be ascertained. It would, however, seem that little short of four-fifths of the sewage of the town does pollute the Weaver or the Dane; and that the settling-tanks into which Mond's Park sewer and Castle ward sewer deliver, as constructed and used, have not lately intercepted any appreciable portion of the polluting material.

A sample of the River Weaver taken at the dock-yard was sent to the County Analyst for analysis, and he reports that it is "a very bad river water," and not as good as the effluents from the Northwich Urban Sewage Outfall Works.

The Clerk of this Urban District notes that the District Council experience considerable difficulty with the sewage in the

*The man who tends the lock stated that he only remembered this tank being once emptied.

centre of the town on account of subsidence, and points out also that an engineer is at present engaged on a scheme for a large portion of the District. He adds: "The town has the advantage of a fast flowing river running through the centre, namely, the River Weaver, and all effluent water flowing into it from the District is rapidly carried away."

The town has a good water supply from the springs at Cote Brook. This water is reported to be "of absolute purity."

The Clerk, to whom a copy of the "return" asking for information as to pollution from works and factories was sent, writes that the Sanitary Inspector "has stated to the Committee that there is no pollution in this District as set out under the heads of the return." This appears to mean that the Authority have no knowledge of waste, solids or liquid, being put into the river direct. There can be no doubt that the sewage passed directly into the river contains more or less trade-refuse.

WINSFORD.

Urban District.

Population at Census, 1891—10440.

Estimated population, December 1896—10795.

Houses at Census, 1891—2193.

Houses in December 1896—2159.

Area in acres—5780.

This Urban District consists of the parishes of Over and Wharton. The area, population and number of houses are given as follows:—

		Area in Acres.	Population at Census.	Houses at Census.
Over	...	4527	6835	1449
Wharton	...	1253	3605	744

The River Weaver runs through Winsford separating Over and Wharton, and the Brooks in the District are known by the following names—Manchester Works, Grange, Lockwood, Rilshaw, Summer's Wood, Perrin's Wood, Francis and Perrin's, and the Boundary Brook dividing Wharton and Moulton.

The number of houses in the District furnished with drains is 2036, and of these 138 are provided with water-closets.

For the convenient disposal of the sewage of the more populous parts of the District, two main systems of sewers have been laid, with a filtration area in connection with each, one in Over and the other in Wharton. The method of construction of the filter beds in Over and Wharton is practically the same. The Local Authority purchased low-lying and submerged land, adjoining the River Weaver. The land is situated south of Winsford Bridge, that on the Over side being about 600 yards, and that on the Wharton side being about 750 yards therefrom.

The level of this land has been artificially raised over a considerable area, by the deposit of waste clinkers, cinders and ashes from the Salt Works in the neighbourhood. The enormous consumption of fuel at these Works results in a corresponding quantity of waste clinkers, cinders, &c. from the furnaces, and of this abundant material the filtration areas have been and are constructed. At a height of about 5 or 6 feet from the river level, the formation of the beds is begun, the beds being simply a series of catchment pounds, or "pans" as they are termed. The sides of the pans are formed by building walls about 4 ft. wide, and in height about 2 ft. above the surface of the cinder-beds. The walls are constructed of clinkers or basses picked from the furnace waste, filled in with cinders and ashes; and down the centre of each wall a "core" of sludge is laid to prevent the percolation of liquid through. The pans are arranged in a row, parallel to the river, and each communicates by means of a pipe with an inlet channel, along which the sewage flows from the outfall sewer. Each pan is divided off at about a fourth of its length from the upper end by a transverse wall of the same description as the walls forming the sides. Thus each pan is divided into a little pan and a big one, and the transverse wall is pierced by a pipe to connect the one with the other. The communication pipes are fixed at about 9 inches above the level of the surface of the beds. The mode of operation is as follows:— All the openings from the inlet channel to the pans are blocked but one, so that the sewage can only enter one "little pan." For a considerable time the liquid percolates through the cinders &c. forming the bottom of the bed and leaves a deposit on the surface. After the sewage has been running into the little pan for a time, varying according to circumstances, from a few hours to a few days, it rises to the level of the communicating pipe and overflows into the bottom or big pan. Much of the solids having been deposited in the little pan, the deposition in the big pan is not so great and the percolation through the bottom, per square yard, more rapid. In due course the sewage is turned from the inlet into another pan, the one last used being allowed to drain off entirely. When the sludge is fairly dry, it is collected in barrows and wheeled off for deposit on land, and then the bottom of the pan is raked over and loosened, and thus prepared to receive sewage again, in rotation.

These filter beds were originally constructed in the year 1879, and the Surveyor reports that the scheme received the sanction of Local Government Board, after a local inquiry had been held. On subsequent occasions, it is stated, the filter beds have been seen (unofficially) by Inspectors of the Local Government Board, and the system of filtration commended.

As there is no means of ascertaining what proportion of the sewage sinks into the ground and what proportion reaches the river, nor any means of ascertaining the quality of the effluent from the filters, it is not possible to estimate to what extent

the filters are effectual, or what amount of pollution of the river actually takes place. Analyses of samples of water from the river flowing past the filters have on various occasions failed to show any marked increase of impurity at this point.

Still that there is some amount of pollution of the River Weaver from Winsford sewage there seems no reason to doubt. The extent will depend very much upon the care bestowed upon the construction of the filter-beds, the removal of the sludge, the cleansing of the bottoms, &c., and however well such filters are managed it can hardly be expected that they will produce a first-class effluent.

Some credit is due to the Local Authority who, placed in exceptional circumstances, utilised the materials at hand for dealing with their sewage, and those who devised these filters are doubtless able to improve upon them, so as to make the results yet more satisfactory.

The water-supply of Winsford is derived from springs at Little Budworth, flowing by gravitation to the town.

As regards pollution from works or factories the Clerk to the Winsford Urban District Council writes :—

“ The River Weaver, to the south of Winsford, expands itself into a large flash, comprising about 100 acres. This is caused partially by the backing up of the waters of the Weaver under statutory authority, but more largely by the subsidence of the land occasioned by brine pumping. The land which is thus covered by water is partially compensated for by the River Weaver Trustees, but the fee simple of the land still belongs to the owner, and we have always taken it in this District that he has a right to fill up subsiding land with a view of raising it so as to prevent its being flooded or washed by the river. Therefore in this flash large quantities of cinders are placed by the salt proprietors, with the consent of the owners, with a view partially of getting rid of the salt refuse and partially for the purpose of raising the land which is subsiding. No harm appears to be done to the river by the steps which are taken, and it seems somewhat doubtful whether the course adopted comes within the purview of the Rivers Pollution Act, because it has always been taken that if land subsides by the side of the river the owner has a right to raise such subsiding land by any means he thinks necessary.

“ No rivers, brooks or streams are polluted by sludge collected in mill-lodges. As far as we are aware none of the rivers, brooks or streams are polluted by waste liquids from any of the works mentioned.”

MIDDLEWICH.

Urban District.

Population at Census, 1891—4001.

Estimated population, December 1896—4800.

Houses at Census, 1891—864.

Houses in December 1896—984.

Area in acres—1095.

In this District are portions of the Rivers Dane, Wheelock and Croco.

Of the 984 houses belonging to the District, 920 are on the sewerage system. Only 15 of these houses are provided with water-closets.

Seven acres of land are leased by the Local Authority, and a large portion of this, it was stated, could be made available for sewage treatment. At present $1\frac{1}{2}$ acres are used for irrigation, the sewage being applied to the land intermittently. The land is clayey, and it is doubtful if the sewage really goes through it. The effluent is discharged into the River Wheelock, which adjoins the land.

When the County Medical Officer of Health (in company with the District Medical Officer of Health and Surveyor) inspected the ground, a great deal of rain had lately fallen, and the arrangements did not appear to be working very satisfactorily. It was therefore thought desirable to have a sample of the effluent taken (as discharged into the river) and sent to the County Analyst for analysis. A sample was accordingly taken and sent to the County Analyst. His report is as follows :—

Appearance in tube	...	Very clear
Smell when heated to 100° F.	...	Nil
Total solid matter at 212° F.	...	294 grains per gallon
Total mineral matter	...	272 " "
Loss on ignition	...	22 " "
Chlorine in chlorides	...	147 " "
Phosphoric acid	...	heavy traces
Nitrogen in nitrites	...	traces
Nitrogen in nitrates	...	under 1 grain per gallon
Free ammonia	...	0.7 grain "
Albuminoid ammonia	...	0.07 " "
Oxygen absorbed, 15 minutes at 60° F.	0.20	"
" " 3 hours	0.38	"

Microscopical examination of deposit showed organic matter.

General remarks on sample—This is a very good effluent, but would not be fit for a sewage farm owing to the large quantity of salt which it contains.

While, therefore, it appears that no considerable pollution of the river is taking place at Middlewich from sewage, the County Medical Officer of Health suggests that the District Council would do well to consider whether some more efficient

means of treating the sewage at the outfall might not be practicable.

The District has a good water-supply from the Water Works recently constructed, and most of the houses are fitted up with taps inside.

As regards pollution from factories, the only pollution reported by the Local Authority is from the Chemical Works of Messrs Brunner, Mond, & Co., Limited, who discharge their effluent into the River Croco.

NANTWICH.

Rural District.

Population at Census, 1891—22903.

Estimated population, December 1896—23400.

Houses at Census, 1891—4990.

Houses in December 1896—5115.

Area in acres—98458.

This District includes 65 townships and portions of 3 other townships.

The River Weaver runs right through the District. At Warmingham there is a portion of the River Wheelock, and at Bunbury are the River Gowey and tributary brooks. The principal streams are Wettenhall Brook, Ash Brook and Bankside Brook, in the north of the District, the Foul Brook at Winterley, the North and South Brooks near Crewe, Leighton Brook, the brooks at Haughton, Wardle and Stoke, Salt Brook, Wistaston Brook and Gresty Brook, the Radway Green, Barthomley and Englesea Brooks, Wybunbury Brook, Checkley Brook, Artle Brook, the Barnett Brook, and the brooks at Audlem and Burton. In the extreme south of the District is the River Duckow, a tributary of the Weaver.

The Leighton Brook (which as it passes Crewe is known as the North Brook) is polluted by the effluents from the Crewe sewage farm. The waters of this brook are offensive and dark in colour as they join the River Weaver, and they are visible as a separate black stream for hundreds of yards along the river. The River Weaver is also polluted by the sewage from Nantwich Urban District.

Since the Coppenhall sewers were transferred to the Crewe Corporation, the only sewers belonging to the Rural District Council are those at Calveley and Audlem.

At Calveley there are only 23 houses (none of which have water-closets) on the sewerage system. The sewage is passed through a chamber charged with alumino-ferric, and then delivered into a settling-tank, 12 feet by 4 feet, divided into 3 compartments. The sludge deposited is removed weekly. On

the day when the inspection was made the effluent was remarkably good. The effluent is discharged into a tributary of the River Gowey.

At Audlem are 10 houses directly connected with the sewer, and 25 more drain into a road-drain which delivers into the sewer. About 6 other houses could be drained into this sewer. There are two water-closets connected with the sewer, and 3 not connected, in other parts of the village. The outfall of this sewer is on the Moss Hall meadow, from whence the effluent reaches the River Weaver. There is ample space for irrigation on this meadow. However, the sewage should be properly distributed over the land, and this is not done at present. On the same side of the brook at Audlem, are 44 houses draining into road-drains, or ditches or tanks with overflows, the sewage from which ultimately passes into the brook. On the east side are about 28 houses, the sewage from which ultimately reaches the brook.

The remaining large villages in the District are Haslington, Willaston,* Shavington and Bunbury. In all four the houses are chiefly drained into road drains, ditches, and tanks with overflows, the sewage sooner or later reaching a contiguous stream. Many of the ditches thus polluted are in a foul condition, and after heavy rainfalls their contents are to a great extent washed into the streams. In the smaller villages the houses are drained in much the same way. At Barbridge the houses are drained by a common sewer, which discharges directly into the large brook passing through the village. The farm houses and farm buildings are for the most part drained into cesspools, the contents of which are ordinarily utilized on the land, but there is fouling of ditches, &c., from overflows. The extent of the pollution of ditches and streams from isolated houses appears to depend much upon the attention given the matter by the occupiers. As regards the cottages, where there are large gardens, a considerable portion of the sewage can be utilized; and some years ago in parts of this district a system of garden sub-irrigation was introduced, and answered as long as proper attention was given by the cottagers to keeping the drains clear.

The brook running through Barthomley to Crewe, and Checkley Brook running by Wybunbury, are polluted by chemicals from works in Staffordshire, and also to some extent by Staffordshire sewage.

The townships provided with mains, or public water supplies, by the District Council, are as follows:—Acton, Hen-hull, Edleston, Alvaston, Aston-juxta-Mondrum, Church Minshull, Brindley, Beeston, Bunbury, Burland, Cholmondestone,

*There is a portion of Willaston adjoining Nantwich town which drains into road drains and these fall into a culvert which discharges into the River Weaver.

Chorlton, Church Coppenhall, Crewe, Haslington, Haughton, Hough, Hurleston, Leighton, Minshull Vernon, Wimboldsley, Poole, Rope, Shavington-cum-Gresty, Spurstow, Stapeley, Stoke, Wardle, Warmingham, Willaston, Wistaston, Weston, Basford, Woolstanwood, Worleston and Wybunbury. In all there are upwards of 112 miles of mains laid, and 3200 houses supplied. The remainder of the District is supplied by wells, springs, or ponds. In a few instances the sole supply is rain-water stored in tanks.

The townships of Cholmondeley, Bulkeley and Wettenhall, are in course of being supplied by public water mains.

CREWE.

Municipal Borough.

Population at Census, 1891—32783.

Estimated population, December 1896—38690.

Houses at Census, 1891—6817.

Houses in December 1896—7966.

Area in acres—2193.

The area of the Borough of Crewe, when incorporated in 1877, was 1336 acres. In November, 1892, the limits of the Borough were extended to include parts of the civil parishes of Coppenhall Church, Shavington-cum-Gresty and Wistaston ; the total area of the extended Borough being 2193 acres.

The brooks or streams in the District are the North Brook and the South Brook, which are tributaries of the River Weaver.

All the houses in the Borough are upon the sewerage system, but only 3000 of them are provided with water-closets. Some of the houses not having W.C.'s are accommodated with excreta-pails, others have cesspools, large or small, and many have midden-privies.

The sewage, excreta and ashpit refuse are dealt with at the Corporation farm in various ways. The best of the dry ashpit refuse is sifted in a "two-decker" screen. All but pot sherds, brick-bats, &c., goes through the upper screen ; cinders are sorted out on the lower screen, and fine ash passes through. Paper, scraps of wood, &c., are picked out and burned in a little furnace adjoining, from which pass horizontally three parallel flues, each 2 ft. wide and 1 ft. deep. The fine ash is spread on the iron plates over these flues, and when dry, is sprinkled from a leaden watering-can with commercial sulphuric acid, about 4 per cent. being added. The acidulated ashes thus made are used for mixing with crude nightsoil collected from the excreta pails and cesspools. This used to be done in an old silo, but it was not large enough, so a square of land (45ft. by 45ft.) has been enclosed by a wall and lightly roofed with boards. This makes a convenient manure-shed. It is divided by a low

wall into two equal parts. In one part the nightsoil and acidulated ashes are received and mixed, and in the other manure can be stored. Little mixing is required, and the whole soon becomes in appearance like ordinary soil.* Tanks are also provided for treating fish-offal, &c., with sulphuric acid. The cinders obtained when the dry ashpit refuse is sifted, are mixed with slack, and used as fuel for the boilers at the pumping station. Using the cinders represents a saving in fuel of about 15/- per week.

It has been calculated that 6 loads of dry ashpit-refuse yield about 1 load of brickbats, potsherds, &c., 2 loads of cinders and other combustible material, and 3 loads of fine ash or dust.

The sewage of Crewe is used for broad irrigation, the Corporation having a farm of 280 acres of not very suitable land—parts appear to be clay loam and parts strong clay. During 1896, 180 acres were used for rye-grass (5 crops being obtained), 60 acres were used for oats, 20 acres were used for swedes, &c., and 20 acres were planted with osiers. The sewage is pumped on the farm and received into 2 covered tanks built of brick, which appear to be tight and good. Together these hold about 600,000 gallons of sewage, and were designed to serve as subsidence tanks. From the first no precipitant has been used and for a number of years the tanks have ceased to be used as subsidence tanks. Mr. Woodhouse, the farm manager, has advised that the tanks be used as originally intended and the sludge separated. At present crude sewage is distributed over the farm, and the effluent discharged into the brooks in many places. On the day of inspection the terminations of the 5 principal drains into the North Brook and the 3 principal drains into the South Brook were examined. The effluent discharged at No. 1 and at No. 3 drains was fairly good, at No. 2 and No. 4 the colour was bad, partly from clay staining, at No. 5 the sample was good as regards colour, but the smell was offensive. All these discharged into the North Brook, the water of which appeared fouler than any of the effluents. The stream flows slowly, and on the bed and sides of the brook are sewage deposits. The effluent discharged at No. 6 (by an open drain) was good, at No. 7 very clear (having passed through a cinder heap), and at No. 8 fairly good. Nos. 6, 7 and 8 discharged into the South Brook, and they are all somewhat better than the best effluent discharged into the North Brook. The South Brook is not nearly as much polluted as the North Brook. A sample of water taken from the North Brook just above the spot where the first sewage effluent comes in, appeared to be good; while a sample of water taken from the South Brook

* From an analysis which has been made this manure is found to contain 26 per cent. of organic matter (nitrogen 0.9 per cent.), and phosphate of lime 1.6 per cent. Farmers who have used it report favourably of it.

above the spot where the first sewage effluent comes in, was less satisfactory in appearance.

To sum up, it may be said that there is very little pollution of the South Brook from the sewage farm, but this stream (referred to elsewhere as the Alsager Brook) is already polluted with sewage and trade refuse as it enters the Borough. As regards the North Brook it is undoubtedly polluted from the sewage farm.

However, the Corporation have the means of dealing efficiently with the local sewage. They are well advised by their Medical Officer of Health, and Mr. Woodhouse, who has lately been appointed farm manager, understands his business, and is quite capable of preventing the pollution of either of the brooks from the Crewe farm. The special foulness of the effluent from No. 5 drain was accounted for: Mr. Woodhouse stating that the contents of excreta-pails had been spread on a part of the farm this drain came from, because the enclosure for mixing nightsoil and acidulated ashes was not ready.

Until recently the water-closets and urinals in the Queen's Park emptied directly into the South Brook, but these are now being converted into peat-closets and urinals.

Good water is supplied to the Borough of Crewe from the artesian wells at Whitmore, by the L. & N. W. Railway Co.

There is a brewery connected with the main sewerage system of the town, but the drainage from this is reported to be satisfactory. Galvanizing iron plates is carried on to some extent at the Railway Works, and the waste liquor (pickle) is passed untreated into the sewers.

NANTWICH.

Urban District

Population at Census, 1891—7412.

Estimated population, December 1896—7500.

Houses at Census, 1891—1691.

Houses in December 1896—1709.

Area in acres—703.

The town of Nantwich is built on both banks of the River Weaver. There are no other streams in the District.

Nearly all the houses in Nantwich are on the sewage system. About 230 of the houses have water-closets, about 1160 have excreta-pails which are cleansed weekly, other houses are provided with midden-privies, and the few isolated houses not in the sewerage system drain into cesspools.

The main sewers are constructed with settling-tanks and extracting-gratings, for intercepting the solids in the sewage. These tanks (5 in all) are stated to be cleaned out once or twice a month or oftener. They were designed by Mr. Baldwin

Latham, C.E., and seem well adapted for the purpose intended, provided they are cleansed frequently enough. Still an arrangement of this kind, however well managed cannot be solely depended on to render sewage fit to pass into a river. There are 4 outfall sewers delivering into the River Weaver. The 3 principal outfalls are on the north side, the outfall on the south side is small and only receives from a few outlying houses. The settling-tanks on the north outfall sewer, measure 12 ft. by 4 ft., or 12 ft. by 3 ft. The settling-tank on the south outfall sewer, has two chambers each measuring about 4 ft. by $3\frac{1}{2}$ ft. Since May, 1896, alumino-ferric has been added to the sewage at each of these tanks, a slab of the precipitant being placed on the fixed part of the grating, and left to dissolve as the sewage runs past. It is estimated that the amount of alumino-ferric which has been used is equal to about $7\frac{1}{2}$ tons in the year. Not all the tanks were supplied with alumino-ferric on the day they were inspected.

There are no offensive trades carried on in Nantwich and the 15 slaughter-houses in the District appear to be well supervised. There are however two large tanneries, which were duly inspected. At each tannery are a pair of square settling-tanks, measuring about 32 ft. by 32 ft., and a pair of filter beds (made of sand, soil and burnt clay) similar in size. The drain delivering into the sewer, in each case, is provided with an inspection chamber accessible to the District Council's Inspector.

Thus, the whole sewage of Nantwich is discharged into the River Weaver, but a considerable proportion of the solids is first removed by precipitation, subsidence and gratings.

Samples of sewage as discharged into the river were sent to the County Analyst for analysis, and certified by him to contain varying quantities of suspended matter, chiefly organic, of a very foul nature.

The town is well supplied with water from Baddiley Water Works.

MACCLESFIELD.

Portion of Rural District.

Population at Census, 1891—4468.

Estimated population, December 1896—4468.

Houses at Census, 1891—961.

Houses in December 1896—961.

Area in acres—31704.

The portion of the Macclesfield Rural District which is outside the area under the jurisdiction of the Mersey and Irwell Joint Watershed Committee may be taken proximately as including 14 townships, viz. :—Wildboarclough, Wincle, Bosley, North Rode, Eaton, Gawsworth, Marton, Siddington, Henbury

with Pexhall, Old Withington, Lower Withington, Capesthorne, Chelford, and Snelson.

The brooks and streams in this portion of the Macclesfield Rural District are for the most part tributary to the River Dane, which in the south east forms the boundary of the District for many miles. Clough Brook, Shell Brook, Cow Brook, Mutlow Brook and Chapel Brook, certainly deliver into the River Dane. The Marton Brook, as it leaves the District is known as the Red Lion Brook, and is continued as Bradshaw's Brook. The Dingle Brook and Snape Brook eventually deliver into Peover Eye.

There is, so far as can be ascertained, no proper main drainage in any part of this portion of Macclesfield District. The sanitary accommodation for most of the houses is of the usual primitive kind and there are no water-closets except at some of the halls and large residences. The closets all appear to be drained into cesspools, which in many cases are provided with overflows. The Clough and the Shell Brook are to some extent fouled by slop water, &c. The polluting water from Bosley (so far as it is polluting) joins the River Dane below Bosley Mill. The stream running through Marton, is also fouled to some extent by slop-water, &c.

As regards water-supply, the village of Bosley is supplied by a hydraulic ram in the valley behind the Church, the reservoir being an iron tank on a large brickwork pillar behind an inn—the Harrington Arms. Gawsworth Hall is supplied by a well, and there is a ram in the cellar which it is stated was fixed for the supply of the vicarage. Nearly all the southern portion of Macclesfield Rural District appears to be supplied by shallow wells and a few springs. Some samples examined seemed good, but no great care has been taken to avoid possible sources of pollution. For example at Gawsworth School-house a recently made midden-privy has been placed within 24 yards of the local well supplying the school-house and contiguous cottages.

The only "works" of any importance appears to be the Creamery at North Rode, which is conducted in a cleanly manner.

CONGLETON.

Rural District.

Population at Census, 1891—12505.

Estimated population, December 1896—13000.

Houses at Census, 1891—2592.

Houses in December 1896—2690.

Area in acres—40155.

This District includes 28 townships. The rivers in the District are the Dane, the Wheelock, and the Croco. The

named streams in the District are Bradshaw's Brook, Swettenham Brook, Midge Brook, Schoolpool Brook, Loach Brook, Dairy Brook, Sanderson's Brook, Small Brook, Cresswellshawe Brook and Alsager Brook.

Very little systematic sewerage has been attempted in this District. At Mow Cop, close to the border of Staffordshire, is a small sewer outfall. The sewage is discharged into two brick tanks, one 7ft. by $4\frac{1}{2}$ ft. and the other 6ft. by 4ft. When inspected, the smaller tank did not appear to have been emptied for a long time, and the sewage left both tanks in the condition in which it was received. Below the tanks are 5 acres of meadow land available for irrigation, and the sewage is being roughly distributed over this land. A sample of the effluent was taken as it was being discharged into a neighbouring stream, and sent to the County Analyst for analysis. He reports this to be an exceedingly good effluent.

A little to the south-west of Mow Cop is another small sewer outfall, which is situated at Mount Pleasant. The sewage (from about 100 houses, 6 being in Staffordshire) is discharged into two tanks, each 6 ft. by 3ft. and $4\frac{3}{4}$ ft. deep, and from these is roughly distributed over about 3 acres of meadow land. It drains all along the foot of the field into the River Wheelock. It was impossible to get a sample of the effluent, but the irrigation ground is more than sufficient for the sewage at this outfall.

The above outfalls are in the township of Odd Rode. There is a third small sewer outfall in Church Lawton, where the sewage is distributed over meadow land, draining to a stream, which eventually joins the River Wheelock.

This stream in Church Lawton receives the sewage from Kidsgrove in Staffordshire, which has a population of upwards of 4000.

The only other sewer outfall in the district is at Holmes Chapel. This little village is drained to a meadow, 10 or 12 acres in extent, which slopes down to the River Dane. The sewage is received into two brick tanks, 6 ft. by 3ft., which are in ruins and of no use. It is then roughly distributed over the land. The effluent discharged into the Dane on the day of inspection was good.

There is thus no considerable pollution of the rivers or streams from sewage effluents in the District, but there is pollution of tributaries of the River Wheelock from Kidsgrove and the township of Audley in Staffordshire. There is however considerable pollution of the rivers and most of the brooks and streams from dwelling-houses, farm buildings and farm yards; and also from villages and hamlets which should be properly seweraged and provided with outfall works.

The brook from Kidsgrove (Staffordshire), a tributary of the River Wheelock, is polluted by water from coal and iron mines, slack washing, and by sewage from Kidsgrove.

The River Wheelock is polluted by waste liquids (brine and a liquid containing lime) from Chemical Works at Malkin's Bank.

This District is very largely dependent on shallow wells for its water-supply. In the neighbourhood of Sandbach, the Urban District Council's mains have been extended, and thus a supply has been obtained for Booth Lane, Bradwall, Wheelock, Wheelock Heath, Malkin's Bank and Hassall Green. Rode Heath, Thurlwood, Lawton Heath and part of Betchton are very much in need of a good supply. Holmes Chapel also requires a good supply, many of the inhabitants of this village having to fetch water from some distance.

CONGLETON.

Municipal Borough.

Population at Census, 1891—10744.

Estimated population, December 1896—11045.

Houses at Census, 1891—2730.

Houses in December 1896—2748.

Area in acres—2572.

Many of the dwelling-houses which were uninhabited at the date of the Census are now occupied. Thus the population of the Borough is estimated as having increased 2·8 per cent since the Census, while the number of houses has only increased 0·66 per cent.

Congleton is situated on the River Dane, and the three tributary streams within the district are the Dane-in-Shaw Brook, the Howty Brook and the Loach Brook.

The sanitary accommodation provided for most of the houses in the town is of the primitive kind, known locally as "ashpit closets," but these are year-by-year being converted into pail-closets, of which there are about 850. The number of water-closets delivering into the sewers is stated to be 66 only, the sewage is therefore largely composed of slop-water. There are four main sewers, viz. :—the St. Stephen's sewer, receiving from 9 w.c.'s, the North outfall sewer, receiving from 16 w.c.'s, the Mill Street sewer, receiving from 24 w.c.'s, and the Dane Street sewer, receiving from 17 w.c.'s. These sewers all deliver into the River Dane direct. There are no outfall works at all.

The St. Stephen's sewer discharges into the river opposite St. Stephen's Church. On the day when inspected the sewage appeared to be loaded with solid matter. This was pointed out to the district Medical Officer of Health, and the explanation he offered was that a large quantity of water was being used on that day for road-making with the steam roller, and thus much road detritus was passing into the sewer.

The North outfall sewer discharges into the river below the Old Mill weir. On the day when inspected the sewage here could scarcely be recognised as sewage, being almost as clear as the river.

The Mill Street sewer discharges into the river just above the bridge. Here the sewage was quite warm and obviously mixed with the liquid refuse from a neighbouring factory where waste silk is made up.

The Howty Brook, the level of which is about 20 feet higher than the River Dane, receives the drainage of about 300 houses. The sewage on one side of the brook comes in direct, on the other it comes in through a common sewer. The Howty Brook overflow reaches the river at the Mill Street outfall.

The Dane Street sewer discharges into the river about 500 yards below the bridge. When this outfall was inspected the sewage was foul in appearance, but fairly free from smell.

It is therefore manifest that the River Dane is polluted by the sewage of the town of Congleton. The Howty Brook is also obviously polluted by sewage. As this is confined by a dam, and flows very slowly, the water in the brook appears to be more contaminated than the water in the river. Ordinary house-refuse from contiguous cottages is also occasionally deposited in the brook.

As regards the water of the river a sample was taken below the town (at the boundary) and sent to the County Analyst for analysis, on February 4th, 1896. He reports "This is a second class water, not fit for the supply of a town, but there is nothing in this water which could be injurious to fish or to cattle." On April 27th samples of the river water were taken below the town (at the boundary) and separately analysed by the County Analyst and Mr. Percy F. Frankland. Their opinion of the water, as expressed in a joint letter addressed to the Town Clerk of Congleton on May 12th, is as follows :—

"We beg herewith to inform you that we have completed our analysis of the samples of River Dane water received on the 28th ult., and that we found the same turbid, whilst the amount of organic matter was not in excess of that usually present in rivers flowing through populated districts.

"We are of opinion that this water would not be injurious to fish life nor would it prove a nuisance to the neighbourhood, but inasmuch as the organic matter is to a considerable extent of animal origin the water is not suitable for drinking."

Another sample of water taken from the River Dane on March 23rd, 1897, was submitted to the same chemists for analysis, and their report thereon was to the same effect.

In this Borough are 6 or 7 mills where silk is spun, 3 waste silk mills, and 2 towel-manufactories. The liquor from the waste silk mills constitutes a pollution of considerable importance. The largest of these mills was visited by the County Medical Officer. The waste silk before being spun is

boiled with tallow curd soap, and thus freed from animal gums, etc. The gums, etc., thus removed amount to about 25 per cent. by weight of the waste silk. At the works visited about 100lbs. of soap are used per day, and the quantity of waste liquor (washings) discharged per day is about 3000 gallons. Two samples of waste liquor were taken, one being the washings of China silk and the other the washings of other silks. These were sent to the County Analyst, and analysed by him. His remarks on the results obtained from the analysis of the washings of China silk are :—“This water contains nearly one ounce to the gallon of soap and gummy matter. The soap should be treated with an acid to recover the fatty acids, the same as is done in Yorkshire.” The Analyst’s remarks on the results obtained from the analysis of the washings of the other silks are :—“This contains nearly half an ounce to the gallon of soap and gum.”

There are many slaughter-houses in this Borough, nearly every butcher in Congleton having a private slaughter-house. The drainage from these is received into the sewers, and then discharged into the River Dane.

The waste liquor from the local Gas Works is sent away to be dealt with.

The Corporation have provided the town with a good supply of water from deep wells.

The sewage of the District should be efficiently treated at properly arranged outfall works, and a good effluent only should be passed into the River Dane. The houses discharging into the Howty Brook should be properly sewered, and the sewage treated efficiently, only a good effluent being passed into the stream.

BUGLAWTON

Urban District.

Population at Census, 1891—1,382.

Estimated population, December 1896—1,497.

Houses at Census, 1891—423.

Houses in December 1896—423.

Area in acres—2,911.

Though the number of dwelling-houses in the District is the same as at the Census, it is estimated that the population has increased 8·3 per cent. At the time of the Census 110 of the houses were returned as unoccupied.

Buglawton is situated on the River Dane. A portion of the Dane-in-Shaw Brook is also in the District.

The excremental matter is received in midden-privies for the most part. The contents of these receptacles are from time

to time removed and put upon land by farmers. The number of water-closets is about six. There is no sewerage system or treatment. The sewage, consisting mainly of slop-water and surface water, is discharged into the River Dane.

In this district are three mills where silk is spun and two mills where towels are manufactured, causing no pollution of water. There is a flint-grinding mill, the pollution from which is not injurious, and a pasteboard manufactory, discharging a waste liquid into the Dane containing flour paste. A firm spinning waste silk, which used to pollute the Dane-in-Shaw Brook, were restrained from continuing to do so by injunction, and now irrigate land with their waste liquor.

Water-works recently completed provide excellent water, and this is available for most of the inhabitants. In a few isolated places, and places on a higher level than the water-works, the supply is by means of shallow wells.

This District should be properly sewered and the sewage treated at outfall works, a good effluent only being discharged into the river.

SANDBACH.

Urban District.

Population at Census 1891—5824.

Estimated population, December 1896—6000.

Houses at Census, 1891—1248.

Houses in December 1896—1320.

Area in acres—2694.

The River Wheelock runs through the south part of this District, and the Sandbach Brook crosses the township from Arclid to Wheelock. There is also a small brook between Bradwall and Sandbach and another between Betchton and Sandbach.

Sandbach is provided with a sewerage system and on this are 1160 of the houses in the District. Only 80 houses are accommodated with water-closets. At present all the sewage runs into the brook that passes by Sandbach town and joins the river at Wheelock.

Works are in progress which will receive the sewage just below the town and deal with it there. The method of treatment it is proposed to adopt is that known as the *International* process, "perozone" being added to the sewage to precipitate the solids, and the overflow from the settling-tanks being filtered through beds of "polarite."

Now that the sewage runs direct into the brook and river, considerable pollution takes place, but it is believed that when

the outfall works are completed, further pollution will be prevented.

The works have been a long time in hand, and for many months very little progress has been made.

There appears to be no pollution from works or factories.

The water-supply is good and abundant, and about 1150 of the houses use the town's water. The houses supplied from private wells number 114, these supplies having been reported on and approved.

ALSAGER.

Urban District.

Population at Census, 1891—1912.

Estimated population, December 1896—2500.

Houses at Census, 1891—424.

Houses in December 1896—545.

Area in acres—2241.

It will be gathered from the above particulars that in this Urban District dwelling-houses and population are rapidly increasing.

The streams in the District are (1) the Alsager Brook, which enters the District at the south from Staffordshire, and leaves it a point near Radway Green Station, eventually finding its way to the River Weaver, and (2) a brook in the north of the District called locally the Cresswellshawe Brook, which runs westward to Wheelock.

Alsager has a system of sewers and delivers the sewage into two settling-tanks, each measuring about 15ft. by 7ft. and 5ft. deep, where the sludge is deposited. No chemical is used as a precipitant. The sludge is ladled out at intervals of about two months, and when dry enough to be removed, spread on land contiguous. After it leaves the settling-tank the sewage is used for the irrigation of about two acres of land, and the effluent is piped to the brook in the north of the District. The effluent is not satisfactory and fouls the brook more or less. The District Medical Officer of Health does not know of any pollution of streams except from the imperfectly treated sewage effluent.

A ditch-drain by the side of the road from Talke to Alsager, used to pollute the Alsager Brook, but it has been piped and connected with the sewerage system. About fourteen months ago this was taken over by the Authority.

Of the 545 houses in the District 470 are connected with the sewers. Ninety-eight of the houses are accommodated with ordinary w.c.'s, and 25 with slop-closets.

The water-supply of the District is derived from a shallow well—under 50 ft. deep. This water appears to be hard and a

better could no doubt be obtained, but there is no evidence of its being organically impure. There are 144 houses not supplied with the town's water.

The land used for irrigation was not seen under favourable conditions when inspected by the County Medical Officer of Health. There had been much recent rain, and the tenant in charge of the outfall works was leaving. Under good management no doubt much better results could be obtained. It might be well to try the effect of adding a chemical precipitant to the sewage as it is running into the tanks. In any case the sludge should be removed more frequently, and the brook into which the effluent discharges should be cleaned out.

No pollution takes place from works or factories situated in the District, but the Alsager Brook is polluted by waste liquids from works in Staffordshire, where ammonia and coal tar derivatives are manufactured. There is also slight pollution of this brook from Staffordshire sewage.

SUMMARY AS TO THE POLLUTION OF RIVERS OR STREAMS IN THAT PORTION OF THE ADMINISTRATIVE COUNTY OF CHESTER WHICH IS OUTSIDE THE JURISDICTION OF THE MERSEY AND IRWELL WATERSHED COMMITTEE.

Area, Houses and Population.—The area of the portion of the Administrative County outside the area under the jurisdiction of the Mersey and Irwell Watershed Committee is 481,330 statute acres, that is to say 74·5 per cent. of the area of the whole Administrative County. The Census population of these 481,330 acres is 300,947, that is just 56 per cent. of the Census population of the whole Administrative County. The estimated population of these 481,330 acres at the end of 1896 is 325,743, that is 56·5 per cent. of the estimated population at the same time of the whole Administrative County. Thus while there is only about one-quarter of the area of the County within the jurisdiction of the Mersey and Irwell Watershed Committee, in this quarter are upwards of 43 per cent. of the whole population of the County. The number of houses in the 481,330 acres was 61,120 at the Census, and 67,062 at the end of 1896, about 58 per cent. of the houses in the whole County. The percentage of persons to a house in the 481,330 acres is 4·85.

Area and Population of the Dee Watershed.—The area and population of the watershed of the River Dee, within the Administrative County, is as follows:—

Districts.	Area in Acres.	Population in Dec. 1896
Wirral Rural (part of)	8252	... 2494
Hoyle and West Kirby Urban (part of)	482	... 3300
Neston and Parkgate Urban ...	3260	... 3671
Chester Rural (part of) ...	17280	... 6700
Hoole Urban ...	331	... 4163
Tarvin Rural (part of) ...	33366	... 6170
Malpas Rural (part of) ...	14243	... 3441
 Totals	 77214	 29939

Of course a considerable proportion of this area drains into the estuary of the Dee, or into brooks and ditches, the contents of which find their way to the Dee *below* Chester. The area, in the County, draining to the Dee above Chester is about 52130 acres, having a population of about 11080.

Area and Population of the Mersey Watershed.—If from the area in the County outside the jurisdiction of the Mersey and Irwell Watershed Committee, be deducted the portion of it in the Dee Watershed, and the small portion having

its natural drainage to the Irish Sea, what remains will be in the watershed of the River Mersey. The area of the Mersey watershed is therefore $481330 - 77214$ and $1400 = 402716$ acres. Similarly the population of the Mersey watershed is $325743 - 29939$ and $5460 = 290344$.

A comparatively small portion of this area drains directly into the estuary, and the amount would not be easy to compute. The drainage of the area is mainly to—

- (1) The River Weaver, which rises at Ridley Pool (Nantwich Rural District) and falls into the Mersey estuary at Weston.
- (2) The River Dane, which rises in Macclesfield Forest (near the spot where Cheshire, Derbyshire and Staffordshire meet) and joins the River Weaver at Northwich.
- (3) The River Whealock, which rises just below Mow Cop (Congleton Rural District) and falls into the River Dane at Croxton, and
- (4) The River Gowey, which rises at Bunbury Heath (Nantwich Rural District) and falls into the Mersey estuary at Stanlow.

To these may be added the River Croco, rising near Lower Moss End (Congleton Rural District) and joining the River Dane at Croxton.

Pollution of Rivers or Streams by Sewage or bad effluents from sewerage systems.—In all but 5 of the 28 Districts or parts of Districts reported on, there is pollution of this nature. The 5 Districts are as follows:—

Wallasey Urban District.

Hoyle and West Kirby Urban District.

Runcorn Urban District.

Bucklow Rural District (part of) and

Buglawton Urban District.

Wallasey, Hoyle and West Kirby have a ready outlet for their sewage in the sea, and the town of Runcorn discharges its sewage directly into the Mersey estuary. At Buglawton there is no sewerage system, nor is there any in the part of Bucklow Rural District referred to.

The nature of the pollution and its extent varies much in different districts. The sewage of Alsager, for instance, is but slightly polluting, and such pollution as exists would be stopped by a little more care in the management of the outfall works. In Higher and Lower Bebington and Bromborough, to cite another instance, though the sewage of houses occupied by 8000 persons is discharged untreated into a stream, the pollution is in great part limited to tidal waters. The sewage of Hoole, also, though it pollutes the River Dee, only enters the river below the weir. At Nantwich town, though the sewage is all discharged into the River Weaver, a proportion of the solids is first removed by precipitation and subsidence. On the other

hand, Northwich town discharges little short of four-fifths of its sewage, wholly untreated, into the Rivers Weaver and Dane; and the Borough of Congleton discharges its sewage, wholly untreated, into the River Dane. In many of the Rural Districts the pollution from sewerage systems is very limited, *i.e.* pollution from only a few villages or groups of houses. Indeed the main defect in Rural Districts is that so little sewerage has been attempted.

Pollution of Rivers or Streams by Dwelling-houses not on any Sewerage System.—In all but 8 of the 28 Districts or parts of Districts reported on, there is pollution of this nature. The 8 Districts are as follows :—

Lower Bebington Urban District.
Runcorn Urban District.
Winsford Urban District.
Middlewich Urban District.
Borough of Crewe.
Nantwich Urban District.
Sandbach Urban District.
Alsager Urban District.

In each of these Districts all the houses or nearly all are on the local sewerage system.

The extent of the pollution by dwelling-houses varies much in the remaining 20 Districts. In the District of Hoylake and West Kirby pollution takes place from only two houses and four cottages; and in Wallasey pollution is limited to the sewage from about 30 houses. However, in several of the Rural Districts this form of pollution is quite common. In Tarvin and Wirral Rural Districts, for instance, the local streams are nearly all polluted by sewage from dwelling-houses. It may indeed be said that it is quite a common practice to drain dwelling-houses into the nearest ditch, and the ditch in due course discharges its contents into a contiguous stream. Draining dwelling-houses directly into a stream is doubtless less common, but in more than one District there are scores of houses thus drained. And not only are dwelling-houses drained, directly or through ditches into streams, but also very many farm yards, cow-houses, stables, piggeries, &c. The most marked instance of direct pollution of a stream from human excrement was noted at a public-house in the parish of Threapwood (Malpas Rural District). When inspected this public-house was full of customers, and on a rocky slope in the rear, which forms the yard, was the privy provided for the accommodation of the tenant and his guests. Under the seat was an inclined plain, and the faecal matter and urine was thus conveyed into the waters of the Wych Brook two or three yards below. This stream joins the Worthenbury Brook, and thus reaches the River Dee. In the sections of this Report referring to the various Districts are records of pollution nearly as bad as

at Threapwood, but these are less disgusting, as in the other instances the water polluted is not known to be used as a drinking-water supply.

Pollution of Rivers or Streams by trade-refuse from Works or Factories.—There has been more difficulty in getting information as to the pollution from Works or Factories than as to sewage pollution. In truth the information that has been procured can only be regarded as an instalment of the information obtainable under this head. Fuller information will be obtained in due course and dealt with. Polluting streams with trade-refuse (especially liquid refuse) is an offence which is often very difficult to detect. The polluting material may be colourless, or it may be only discharged at night or at long intervals ; thus unless works are watched and regularly inspected and samples taken for analysis, pollution of streams may go on from year to year of which the Local Authority know nothing.

In 12 of the 28 Districts or parts of Districts there is known to be pollution from trade-refuse. The following is an epitome of the information gathered in this respect.

1. Lower Bebington Urban District.—Bromborough Pool is polluted by liquid waste from the Sunlight Soap Works, making the Pool at low water creamy white, and leaving creamy white deposits on the bank, which cause an effluvium nuisance.
2. Chester Rural District.—The only pollution from trade-refuse known to the Authority in this District is that the Balderston Brook is rendered impure by waste liquid discharged therein from the Creamery at Balderston.
3. Tarvin Rural District.—At Aldford and Tattenhall, the brooks are polluted by Creameries, and at Farndon there is slight pollution of the River Dee from a Brewery.
4. Runcorn Rural District.—Chemical Works at Weston, Bone-boiling Works at Sutton, Clifton and Frodsham, Blood-drying Works at Clifton, Tanneries at Preston-on-the-Hill, Halton and Frodsham, and Fish-oil-extracting Works at Clifton, pollute various Brocks in this District.
5. Northwich Rural District.—In this District there is admitted to be some pollution from cinders and refuse from Salt Works and Alkali Works, from sludging of mill-lodges and from brine. There is also some pollution from the Chemical Works of Messrs. Brunner, Mond & Co., Limited, at Winnington, Messrs. Bowman, Thompson & Co., Limited, and Messrs. Davis's Chlorine Process Co., Limited, at Lostock Gralam.
6. Northwich Urban District.—In this District the Local Authority have no knowledge of direct pollution, but there can be no doubt that the sewage passed directly into the river contains trade-refuse.

7. Winsford Urban District.—The River Weaver, to the south of Winsford, expands itself into a large flash, comprising about 100 acres; and in this large quantities of cinders are deposited by the salt proprietors, with the consent of the owners of the land covered by water. It is alleged that no harm is done to the river by this.
8. Middlewich Urban District.—The only pollution reported by the Local Authority is from the Chemical Works of Messrs. Brunner, Mond & Co., Limited, who discharge their effluent into the River Croco.
9. Borough of Crewe.—Slight pollution is reported from Galvanizing Works, waste liquor (pickle) therefrom being passed untreated into the sewers, and assisting to foul the North Brook.
10. Congleton Rural District.—In this District the River Weaver is polluted by waste liquids from chemical works at Malkin's Bank.
11. Borough of Congleton.—In this town are 3 waste silk works which discharge their "boiling off" liquor into the River Dane. This "boiling off" contains from half an ounce to an ounce of soap and gummy matter in the gallon, and from one works about 3000 gallons per day are discharged. There appears to be no other trade refuse pollution of importance in the Borough.
12. Buglawton Urban District.—Here there appears to be slight pollution of the River Dane from a flint-grinding mill and also from a paste-board manufactory.

Pollution of Rivers or Streams, in the Administrative County of Chester, by Sewage or Trade Refuse belonging to other Counties. The most obvious case of this is the pollution of the River Dee in Denbighshire, Flintshire, Merionethshire, and Shropshire, particulars of which are given in Dr. R. Bruce Low's Report to the Local Government Board. There is also some contamination of Cheshire streams taking place in Staffordshire. Pollution of this nature is reported from 3 Districts. In the Nantwich Rural District the brook running through Barthomley to Crewe and the Checkley Brook running to Wybunbury, are polluted by chemicals from works in Staffordshire and also to some extent by Staffordshire sewage. A brook from Kidsgrove (Staffordshire) which passes through the Congleton Rural District to the River Whealock is polluted by water from coal and iron mines, slack-washing, and by sewage from Kidsgrove. The Alsager Brook in the Alsager Urban District (which afterwards passes through the Borough of Crewe and is there known as the South Brook) is polluted by waste liquids from works in Staffordshire, where ammonia and coal tar derivatives are manufactured. There is also pollution of this brook from Staffordshire sewage.

CONCLUSIONS.

1. That the Rivers and Streams in the County of Chester, outside the Area under the Jurisdiction of the Mersey and Irwell Joint Watershed Committee, are nearly all polluted with sewage, and many of them with trade refuse.
2. That of the 28 Districts or parts of Districts in the Area referred to, pollution of Rivers and Streams takes place in all but one. The exception is the Runcorn Urban District (even there the "big pool" is fouled by 5 houses which drain into it, and about 27 houses are not drained at all).
3. That the pollution of the River Dee and its tributaries taking place in Cheshire and in other Counties (inasmuch as the Dee is known to be largely used as a drinking-water supply) is attended with greater danger to health than the pollution of other Rivers and Streams in the area referred to.
4. That 4 Streams flowing from Staffordshire are polluted with sewage and trade-refuse when they reach the Cheshire border.
5. That there are many small towns and villages, situated in various Districts, not provided with drainage by the Local Authority, and that this is largely responsible for the pollution of streams by separate houses.
6. That drains and ditches intended originally to convey surface water only, have in many instances been used to convey sewage, and thus been converted into sewers.
7. That the ditches used as drains throughout the County are not regularly and thoroughly cleansed as they should be. Slop-water, cow-shed and pig-sty drainage, and occasionally human excrement is passed into them and suffered to deposit, to be washed into brooks from time to time by heavy rainfalls.

What has been done recently or is being done, to prevent Pollution of Rivers, &c.

Steps have been taken to bring about the formation of a Joint Committee for putting into force the Rivers Pollution Prevention Act, 1876, for the watershed of the River Dee above the weir at Chester. A conference of the representatives of the several Councils interested was held at Chester Castle on April 12th, 1897, when it was

RESOLVED—That in the opinion of this conference it is expedient that the County Councils of Cheshire, Denbighshire, Flintshire, Merionethshire, Shropshire, and the County Borough of Chester should jointly concur in petitioning the Local Government Board to issue a Provisional Order under section 14 (3) of the Local Government Act, 1888, constituting a

Joint Committee for putting into operation the Rivers Pollution Prevention Act, 1876, for the watershed of the River Dee above the weir at Chester, shown upon the map prepared by the Cheshire County Council and now submitted to this conference.

It was also resolved that in the opinion of the Conference the Representation of such Councils upon such Joint Committee should be—County of Chester 3, County of Denbigh 5, County of Flint 3, County of Merioneth 1, County of Salop 1, and County Borough of Chester 6; and that all expenses in carrying out the purposes of the Order constituting the Joint Committee should be defrayed out of a common fund to be contributed by the said Councils in proportion to their representation on such Joint Committee.

It was also resolved that, in the opinion of the Conference, the Chester Waterworks Company should contribute annually a substantial sum toward the expenses in carrying out the purposes of the Order, and certain Members of the Conference were authorized to interview the Directors of the Company and negotiate and arrange the amount of such contribution.

Steps have been taken and are being taken by the County Council for the prevention of the pollution by trade-refuse, &c of the Alsager and Barthomley Brooks.

Steps are being taken at Sandbach to carry out a main drainage scheme and construct outfall works. Upwards of £5000 has been borrowed and spent with this object, and on January 19th, 1897, an inquiry was held at Sandbach by a Local Government Board Inspector, owing to the Urban District Council having applied to the Local Government Board for sanction to borrow a further sum of £2100 for the purposes of sewerage and sewage disposal.

Steps are being taken at Tarporley to carry out a main drainage scheme and construct outfall works. By March 25th, 1897, £1320 had been raised by levying a special rate, and of this sum £708 had been expended. It is estimated that to complete the main drainage and outfall works as planned, about £1000 will be required in addition to the £612 in hand.

Steps are being taken by the County Council to prevent the pollution of the River Dane at Congleton. On July 16th, 1897, the Rivers Pollution Committee passed a resolution that an intimation be sent to the Town Clerk of Congleton, that unless the Corporation of that Borough within a period of six months from the date of the next Council Meeting, take the necessary steps for preventing the sewage from the Borough polluting the river in question, this Committee will have no alternative but to recommend the Council to give instructions for proceedings to be taken under the Rivers Pollution Prevention Act, 1876.

RECOMMENDATIONS.

1. That pollution of rivers, &c., by sewage or bad effluents from sewerage systems being commonly pollution on a large scale ; Districts guilty of this should forthwith be dealt with and required to provide efficient outfall works, where the sewage will be properly treated by precipitants and subsidence, and the effluent filtered or used to irrigate suitable land, or in some other effectual way. The large towns putting the most sewage into rivers should be first dealt with.
2. That Districts in which are small towns and villages not provided with sewers, should be urged to provide main drainage and efficient outfall works for treating the sewage.
3. That a District Surveyor proposing to convert any water-course into a sewer should (if practicable) be required to submit his plan to the County Surveyor or other officer appointed by the County Council, so that outfall works might be insisted on in every case.
4. That such measures as may appear practicable should be taken to insure the regular and thorough cleansing of ditches used as drains.
5. That for the more effectual prevention of pollution from trade-refuse the services of an inspector be obtained, at least temporarily.

FRANCIS VACHER,

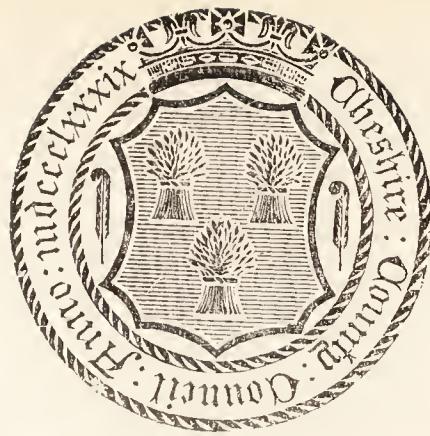
County Medical Officer of Health

September 20th, 1897.

TABLE I.—POPULATION, AREA, BIRTHS, DEATHS, &c.

Showing enumerated and estimated population, area, persons per acre, births and deaths, birth-rates and death-rates, deaths at various ages, proportion of deaths of infants to births, deaths from 7 principal zymotic diseases, & corresponding death-rates.

SANITARY DISTRICTS.	Population at Census 1881	Estimated Population at middle of 1886.	Area in Acres.	Persons to an Acre.	Births.	Birth-rate per 1000 Living.	Deaths.	Death-rate per 1000 Living.	Deaths from All Causes at subjoined Ages.						Deaths under 1 Year to 1000 births.	Deaths from seven principal Zymotic Diseases.	Principal Zymotic Diseases Death-rate		
									under 1 Year	1 and under 6	5 and under 16	16 and under 25	25 and under 65	65 and upwards.					
MUNICIPAL BOROUGHS.																			
Congleton	10744	11389	2572	4.42	351	80.8	216	18.9	43	24	7	10	69	72	122	14	1.2		
Crewe	82783	83160	2193	17.41	1200	81.4	671	14.9	105	90	26	31	153	106	137	76	1.9		
Hyde	80676	81952	8074	16.83	860	80.0	851	20.3	188	81	27	26	207	122	155	89	1.2		
Macclesfield	86009	86009	3215	11.19	964	25.7	686	18.4	150	94	46	25	184	108	155	121	3.3		
Stalybridge	26783	28044	8185	8.94	837	29.8	572	20.8	141	96	21	21	165	104	163	69	2.4		
	136969	145584	14180	10.26	4312	29.6	2874	18.3	687	379	127	113	788	600	159	819	2.1		
OTHER URBAN DISTRICTS.																			
Alderley Edge	2270	2270	683	3.85	44	10.3	26	11.4	2	1	...	1	10	12	45	1	0.4		
Alsager	1912	2506	2241	1.11	48	19.2	23	9.2	3	1	2	11	5	82	0	0	0		
Altrincham	12440	13212	692	19.95	388	29.3	283	17.6	62	24	8	5	54	86	153	23	1.7		
Ashton-on-Mersey	4234	5200	1622	3.20	117	23.4	69	11.3	15	3	4	21	16	128	4	0.7			
Higher Bebington	1421	1552	690	2.23	42	26.8	20	12.8	5	3	8	10	3	107	3	1.3			
Lower Bebington	5216	5555	1654	6.27	261	36.2	69	12.4	18	7	5	1	26	12	84	9	1.6		
Bollington	8913	3013	494	7.82	95	24.5	63	14.8	14	10	4	2	14	14	145	7	1.7		
Bowdon	2792	2890	850	3.40	43	14.3	36	10.3	4	1	...	10	13	33	2	0.6	0		
Bredbury and Romiley—	Bredbury	3801	4446	2536	1.73	105	28.6	64	14.3	14	6	6	4	17	17	138	3	0.6	
	Romiley	1920	2182	1183	1.83	53	24.2	28	12.8	3	3	3	2	10	8	37	5	2.2	
Bromborough	1862	1862	1518	1.13	33	20.9	15	9.8	6	...	...	...	2	7	153	1	0.5
Broughton	1382	1490	2911	0.51	86	24.1	20	18.4	4	...	1	11	4	111	0	0	0		
Cheadle and Gatley	7752	8505	5312	1.46	169	28.4	184	15.7	23	14	9	9	38	38	146	8	0.6		
Dukinfield	17405	19000	1412	13.45	622	31.1	355	18.6	110	54	12	16	107	54	187	42	2.2		
Hollingworth	2895	2896	2086	1.83	81	27.8	64	18.6	13	8	...	11	15	10	4	1.3	0		
Hoole	8329	3329	831	10.05	97	29.1	49	14.7	8	12	5	2	11	11	82	16	4.8		
Hoyle and West Kirby—	Hoyle	4076	5317	1514	3.65	107	23.1	76	13.1	15	11	6	1	23	14	147	10	1.8	
	West Kirby	2469	3190	505	0.33	107	23.1	61	19.0	14	4	4	2	23	16	8	26	0	
Knutsford	4643	4808	1760	2.45	129	28.8	77	17.5	20	13	3	1	17	23	155	5	1.2		
Lymm	4593	5600	1495	1.93	225	23.5	81	11.4	20	6	2	3	36	16	151	4	0.7		
Marple	4844	5276	3053	1.72	120	22.7	59	9.8	5	5	2	4	19	19	41	2	0.3		
Middlewich	4001	4810	1035	4.93	186	38.6	81	16.8	25	10	4	3	23	17	134	14	2.6		
Motttram	8270	3270	1084	3.01	83	25.8	74	22.6	22	7	3	2	26	14	29	4	0.4		
Nantwich	7412	7586	703	10.72	244	32.8	188	18.0	26	21	3	5	48	34	106	16	2.1		
Neston and Parkgate	5377	8671	9260	1.12	139	37.6	64	17.4	20	6	3	2	18	16	144	8	2.1		
Northwich	14914	17860	1385	12.62	655	88.4	314	17.6	117	52	14	7	73	52	170	33	1.8		
Runcorn	20050	18000	1179	15.26	620	34.8	272	15.1	80	80	8	14	37	48	128	10	0.8		
Salt	9544	11500	2065	5.73	201	25.3	182	11.4	86	7	2	2	19	32	156	13	2.0		
Sandbach	6524	6335	2694	2.85	200	31.5	105	16.5	80	14	5	5	11	12	74	4	1.4		
Tarporley	2702	2720	6194	0.44	67	24.6	36	13.2	5	4	1	3	11	12	74	2	0		
Wallasey																			
Poulton-cum-Seacombe	14839	18000	630	21.68	668	63.7	201	16.1	91	28	8	14	95	55	149	34	1.8		
Liscard	16233	28080	982	21.11	491	23.6	284	13.6	69	21	7	11	103	67	140	24	1.1		
Wallasey	2067	2766	1596	1.69	73	27.6	83	14.0	8	7	...	13	10	109	6	3.2	0		
Wilmslow	6344	6741	6103	1.31	186	27.5	78	11.5	18	7	6	2	26	25	59	6	0.8		
Winstorf	10446	10623	5780	1.83	333	86.1	158	14.9	51	15	8	8	87	41	133	18	1.8		
Yearsley and Winkley—	Convalescent Hospital & Royal Asylum, Cheshire	470	610	9	...	1	8	0	
	Chester Union Workhouse, Chester	563	663	21	...	8	...	1	4	3	...	1	...	0	
	Hoole (less proportion not belonging to County)	0	
		219179	241588	72523	3.33	7086	29.2	3087	15.2	982	421	138	149	1116	684	139	371	1.6	
RURAL DISTRICTS.																			
Bucklow—Altrincham	8830	9885	13143	0.75	225	23.5	119	11.9	17	11	5	7	47	82	75	9	0.9		
Lynn	8826	3150	14497	0.21	71	22.5	45	14.2	6	1	5	14	18	70	2	0.6	0		
Knutsford	3061	3584	93810	0.17	96	25.1	48	13.3	13	1	3	12	19	146	3	0.8	0		
Wilmslow	4437	4808	10475	0.45	105	21.8	61	16.8	14	4	3	1	33	26	133	3	0.9		
Chester	10050	9550	55377	0.26	206	21.5	121	12.6	20	8	7	32	38	87	17	1.7	0		
Congleton—Church Hulme	3000	3000	14912	0.20	59	23.0	37	12.3	7	4	1	11	15	101	0	0	0		
Congleton	1131	1131	7586	0.14	21	18.5	18	15.9	3	1	1	8	4	143	1	0.6	0		
Sandbach	8374	8585	17567	0.51	240	27.0	187	15.7	26	12	10	6	37	47	103	6	0.5		
Disley	2365	2365	2300	0.24	60	21.7	27	11.7	1	1	1	1	11	8	100	100	0		
Macclesfield—Alderley	Bollington	2845	3055	15629	0.02	81	20.0	48	14.3	8	3	3	16	17	101	1	0.3	0	
	Gawsworth	2672	2755	17983	0.15	64	18.5	42	14.4	4	3	1	15	13	74	5	1.7	0	
Prestbury	4969	5095	13667	0.37	116	22.5	57	17.0	12	5	1	4	41	24	104	6	1.1	0	
Rainbow	2097	2156	14274	0.15	68	26.6	44	20.4	5	6	3	15	12	103	6	0	0		
Sutton	1786	1840	14254	0.14	47	25.6	31	18.8	7	1	1	12	1	149	3	1.8	0		
Malpas	3246	3246	14583	0.87	315	29.2	146	12.1	43	16	5	3	50	40	133	2	0.4	0	
Nantwich—Grove	10823	11412	51445	0.07	228	28.6	66	18.6	9	6	2	3	27	19	116	5	1.4	0	
	Bunbury	3105	3105	15845	0.19	76	24.4	51	16.4	7	5	10	2	12	16	92	11	3.5	0
Northwich—Weaverham	5066	5561	18000	0.47	299	24.6	139	16.2	44	19	10	5	5	34	34	147	25	2.9	0
Northwich	7051	6090	10511	0.74	363	44.8	123	15.2	35	15	8	8	35	19	104	14	1.7	0	
Over	3033	3033	12473	0.24	89	28.8	47	16.2	17	10	8	2	13	12	168	8	1.4	0	
Marple	3239	2759	12588	0.07	88	30.0	39	14.7	8	2	1	1	13	12	168	9	1.4	0	
Runcorn—Budworth	Runcorn	10524	11735	24559	0.46	307	26.6	147	12.0	31	10	8	8	48	48	121	10	0.8	0
	Frodsham	8763	9467	15727	0.60	288	30.4	114	12.0	29	16	6	8	31	29	100	21	2.2	0
Stockport	10169	10500	8937	1.17	252	23.9	132	12.5	22	14	4	4	48	40	87	7	0.6	0	
Farvin	12752	12752	56873	0.23	342	26.8	182	14.2	35	23	12	7	49	55	102	23	1.8	0	
Tintwistle	2576	2630	16161	0.19	61	23.1	42	15.9	8	5	5	3	11	10	131	5	1.3	0	
Wirral																			
Weston Sub-District	8506	3665	12668	0.28	180	35.4	58	14.4	16	1	2	2	17	15	123	8	2.1	0	
Eastham	10900	8538	11287	0.75	228	26.6	87	11.6	26	12	6	8	19	18	114	11	1.6	0	
Woodchurch	8671	8750	12610																



County Palatine of Chester.

REPORT

OF THE

Medical Officer of Health

FOR THE YEAR 1896,

WITH STATISTICAL INFORMATION AND
SUMMARY OF REPORTS OF DISTRICT
MEDICAL OFFICERS OF HEALTH.

PRESENTED TO THE

PUBLIC HEALTH COMMITTEE
OF THE COUNTY COUNCIL,

July 16th, 1897.

—

CHESTER:

PHILLIPSON & GOLDER, PRINTERS, EASTGATE ROW & FOREGATE STREET.

INDEX.

		PAGE
Area and Population of County	...	1
Births ...	...	6
Deaths ...	...	6
Infant Mortality ...	...	7
Still-born Children...	...	9
Mortality among Old People ...	...	10
Uncertified Deaths	...	10
Coroners' Inquests...	...	10
Zymotic Diseases ...	...	10
Small-pox	...	12
Vaccination	...	13
Measles ...	...	15
Scarlatina	...	17
Return Cases	...	19
Diphtheria and Croup	...	20
Diagnosis of Diphtheria	...	23
Whooping-cough ...	...	23
Fever ...	...	24
Typhus Fever	...	24
Typhoid and Continued Fever	...	25
Puerperal Fever	...	28
Diarrhoea	...	29
Erysipelas	...	30
Influenza	...	30
Rheumatic Fever ...	...	31
Phthisis	...	31
Bronchitis, Pneumonia, &c. ...	...	32
Heart Disease	...	33
Deaths from Injuries	...	33
Deaths from "Natural causes"	...	33
Alcoholism	...	34
Death from Lock-jaw	...	34
Rabies ...	...	35
Death from Dog Bites	...	35

	PAGE
The Infectious Disease (Notification) Act, 1889	35
Notification of Sickness by Friendly Societies	36
Isolation Hospitals	36
The Isolation Hospitals Act, 1893	39
The Infectious Disease (Prevention) Act, 1890	61
The Public Health Acts Amendment Act, 1890	62
The Private Street Works Act, 1892	62
Disinfection by Steam	63
Disinfection of Premises	64
Systematic Inspection	65
Abatement of Nuisances	65
Examining Houses on Request	66
The Ratable Value of Houses	66
Ashpits, Middens, &c.	66
Refuse Removal	67
The Use of Pails containing Acidulated Peat	69
The Use of Acidulated Ashes	69
Destructors	70
Sewering	70
Flushing Sewers and Drains	72
Sewer Ventilators	73
Pollution of Rivers and Streams	73
The Rivers Pollution Prevention Act, 1893	74
Dwelling Houses unfit for Habitation	74
Overcrowding	75
The Housing of the Working Classes Act, 1890	75
Part 1—Unhealthy Areas	75
,, 2—Unhealthy Dwelling Houses	76
,, 3—Working Class Lodging Houses	76
The Housing of the Working Classes Act, 1894	77
New Houses and Building Bye-laws	77
New Streets	78
School Accommodation	78
Workshops	78
Lodging-houses	79
Houses Let in Lodgings	80
Water-supply	80

Dairies, Cow-sheds, and Milk Shops	...	...	...	...	86
Bakehouses	...	...	...	...	89
Unsound Meat, &c.	...	...	...	...	89
Slaughter-houses	...	...	...	...	91
Offensive Trades	...	...	...	...	92
Food Adulteration...	...	...	...	...	93
Recreation Grounds	...	...	...	...	93
Meteorological Results	...	...	...	...	93
Inspection of Canal Boats	...	...	...	...	93
Interments	...	...	...	...	94
Table 1—(Population, Area, Births, Deaths, &c.)					
,, 2—(Mortality)	...	...			} See end of Report
,, 3—(Infectious Sickness)	...				

Summary of District Medical Officers' Reports—

MUNICIPAL BOROUGHS.

Congleton	...	...	...	...	...	97
Crewe	...	...	...	...	...	99
Hyde	...	...	...	...	...	115
Macclesfield	...	...	...	...	...	121
Stalybridge	...	...	...	...	...	132

URBAN DISTRICTS.

Alderley Edge	...	...	...	...	...	135
Alsager	...	...	...	...	...	137
Altrincham	...	...	...	...	...	138
Ashton-upon-Mersey	...	...	...	...	...	141
Higher Bebington	...	...	...	...	...	142
Lower Bebington	...	...	...	...	...	143
Bollington	...	...	...	...	...	145
Bowdon	...	...	...	...	...	148
Bredbury and Romiley	...	...	...	...	...	149
Bromborough	...	...	...	...	...	152
Buglawton	...	...	...	...	...	153
Cheadle and Gatley...	...	...	...	...	...	154
Dukinfield	...	...	...	...	...	158
Hollingworth	...	...	...	...	...	165
Hoole	...	...	...	...	...	167
Hoyle and West Kirby	...	...	...	...	...	168

					PAGE
Knutsford	...	...	...	...	170
Lymm	...	...	...	...	174
Marple	...	...	...	...	175
Middlewich	...	...	...	...	178
Mottram	...	...	...	...	181
Nantwich	...	...	...	...	183
Neston and Parkgate	...	...	...	...	186
Northwich	...	...	...	...	188
Runcorn	...	...	...	...	192
Sale	...	...	...	...	195
Sandbach	...	...	...	...	196
Tarporley	...	...	...	...	198
Wallasey	...	...	...	...	200
Wilmslow	...	...	...	...	212
Winsford	...	...	...	...	213
Yeardsley-cum-Whaley	...	...	...	...	217

RURAL DISTRICTS.

Bucklow	...	...	...	...	218
Chester	...	...	...	...	225
Congleton	...	...	...	...	228
Disley	...	...	...	...	230
Macclesfield	...	...	...	...	231
Malpas	...	...	...	...	236
Nantwich	...	...	...	...	239
Northwich	...	...	...	...	247
Runcorn	...	...	...	...	255
Stockport	...	...	...	...	262
Tarvin	...	...	...	...	266
Tintwistle	...	...	...	...	269
Wirral	...	...	...	...	271

REPORT

OF THE

Medical Officer of Health

For the Year ending Dec. 31st, 1896.

*To the Public Health Committee of the County Council
of the County Palatine of Chester
and to the Members of the County Council.*

Report of the Medical Officer of Health

For the Year ending December 31st, 1896.

Area and Population.—The Geographical County of Chester has an area of 657,068 acres, and the population at the taking of the Census in 1891 was 730,058, *i.e.*, just over one (1.11) person to an acre.

The differences between the area and Census population of the Geographical County and those of the Administrative County, together with the County Boroughs of Birkenhead, Chester, and Stockport are shewn as follows:—

		Area in Acres.	Population Census, 1891
Geographical County	... ... ...	657068	730058
Add			
Part of Stockport County Borough in the Geographical County of Lancaster...	... ... ...	480	16368
Part of Stalybridge Urban Sanitary District in the Geographical County of Lancaster	... ...	685	7278
		658233	753704
Deduct			
Part of Mossley Urban Sanitary District in the Administrative County of Lancaster	... ...	2702	2887
Part of New Mills Urban Sanitary District in the Administrative County of Derby	... ...	127	1163
Part of Warrington Urban Sanitary District in the Administrative County of Lancaster	... ...	368	5785
Administrative County and 3 County Boroughs	... ... .. ...	655036	743869

From the area and population thus obtained must be deducted the area and population of the 3 County Boroughs, and the result will be the area and population of the Administrative County. This is done below.

		Area in Acres.	Population, Census, 1891.
Administrative County and 3 County Boroughs	...	655036	743869
Deduct	...		
County Borough of Birken- head	...	3849	99857
County Borough of Chester		2960	37105
County Borough of Stockport		2200	70263
Administrative County	...	646027	536644

The Census population of the Administrative County was thus less than one (0.83) person to an acre.

The Registration County has an area of 643,791 acres and a Census population of 707,978, its boundaries differing from those of the Geographical County as well as those of the Administrative County and 3 County Boroughs. The Registration County is indeed simply a group of 10 Registration Districts, generally co-extensive with Poor Law Unions, and covering nearly the same area as the Geographical County, but less in extent by 13,277 acres.

These 10 Registration Districts suggest a convenient way of subdividing the Administrative County. There is, however, no advantage in making two districts out of the Hundred of Wirral. With this exception the Registration Districts may be adopted, and all that requires to be done is to make them co-extensive with Urban and Rural Districts in the County. The 9 Districts thus formed naturally fall into 3 groups—Wirral, Chester and Runcorn being the 3 Western Districts; Bucklow, Northwich and Nantwich the 3 Central Districts; and Stockport, Macclesfield and Congleton the 3 Eastern Districts.

The Urban and Rural Districts in each of the 9 Sub-divisions of the County are as follows:—

No.	Sub-Divisions of County.	Urban Districts.	Rural Districts.
1	Wirral	Wallasey, Higher and Lower Bebington, Bromborough, Hoylake and West Kirby, Neston and Parkgate.	Wirral
2	Chester	Hoole, Tarporley.	Chester, Tarvin, Malpas
3	Runcorn	Runcorn.	Runcorn
4	Bucklow	Altrincham, Ashton-upon-Mersey, Bowdon, Knutsford, Lymm, Sale, Wilmslow.	Bucklow
5	Northwich	Northwich, Middlewich, Winsford.	Northwich.
6	Nantwich	Crewe, Nantwich, Alsager.	Nantwich.
7	Stockport	Hyde, Stalybridge, Dukinfield, Bredbury and Romiley, Cheadle and Gatley, Hollingworth, Marple, Mottram.	Stockport, Tinttwistle.
8	Macclesfield	Macclesfield, Alderley Edge, Bollington, Yeardsley-cum-Whaley.	Macclesfield, Disley.
9	Congleton	Congleton, Buglawton, Sandbach.	Congleton.

"Part of Wrexham" is omitted from the Rural Districts in No. 2 Sub-division, as the area thus represented was in 1895 transferred to the Rural Districts of Tarvin and Malpas. "Part of Drayton" is omitted from the Rural Districts in No. 6 Sub-division, as the area thus represented (Tittenley) has been transferred from the Administrative County of Chester to the Administrative County of Salop.

The Areas of the Sub-Divisions of the Administrative County, the Census population, and persons per acre are as follows:—

Sub-divisions of County.	Area in Acres.	Population Census, 1891.	Persons per Acre.
Western Sub-divisions—			
Wirral	50644	70357	1.38
Chester	120183	34745	0.28
Runcorn	50499	44711	0.88
Central Sub-divisions—			
Altrincham	75303	65460	0.86
Northwich	62564	50278	0.80
Nantwich	101354	63098	0.62
Eastern Sub-divisions—			
Stockport	45933	112678	2.45
Macclesfield	88469	63016	0.71
Congleton	50573	32367	0.64

This differs from the tabular statement as regards Sub-divisions presented in the Annual Report for 1892, as the four Townships of Tiverton, Tilstone Fearnall, Beeston and Burwardsley were in that year taken from the Nantwich Rural District and added to the Tarvin Rural District. Thus 5617 acres and 1401 population were transferred from the Nantwich Sub-division to the Chester Sub-division. It differs also from the tabular statement in the Annual Report for 1895, as 96 acres and 100 population, representing the portion of Threapwood, lately in Flintshire, have been added to the Chester Sub-division; and 581 acres and 34 population, representing the Township of Tittenley, lately transferred to Shropshire, have been deducted from the Nantwich Sub-division.

The number of Urban Districts in the Administrative County is thus 37—5 Municipal Boroughs and 32 other Urban Districts, and the number of Rural Districts is 13. The area and Census population of the 5 Municipal Boroughs taken together, of the other Urban Districts, and of the Rural Districts are as follows:—

	Area in Acres.	Population at Census.
5 Municipal Boroughs	... 14189	136989
32 other Urban Districts	... 72528	219179
13 Rural Districts	... 558825	180542

This differs from the corresponding tabular statement presented in the Annual Report for 1892, as parts of Coppenhall Church, Shavington-cum-Gresty, and Wistaston were from November, 1892, taken from the Nantwich Rural District and added to the Borough of Crewe, transferring 857 acres and 4022 population from the Rural Districts to the Municipal Boroughs.

The area (2241 acres) and Census population (1912) of Alsager, the area (1622 acres) and Census population (4234) of Ashton-upon-Mersey, the area (1760 acres) and Census population (4643) of Knutsford, the area (843 acres) and Census population (295) of the land added to Middlewich, and the area (61 acres) added to Bromborough, have also been transferred from the Rural Districts to the Urban Districts.

The Census was taken in the first week of April, 1891, and for the Annual Report of 1896 an estimate is required of the population at midsummer, 1896. This estimate has been made for each District by the District Medical Officer of Health. The increase during the 5 years and 3 months is set down at 34,973. Therefore, in the middle of the year 1896, the population was 571,683. It was thus distributed:—

5 Municipal Boroughs ...	...	...	145,584
32 other Urban Districts	...	...	241,858
13 Rural Districts ...	...	...	184,241

The estimated increase is not excessive, being at the rate of 12·4 per cent. on the decennium. The actual increase of population in the area representing the Administrative County in the ten years 1881—91 was at the rate of 12·5 per cent. It will be noticed, on referring to Table I. in the Appendix, that some districts, as the Borough of Macclesfield, are not estimated as having increased. Macclesfield decreased in population during the ten years 1881—91. The population of the town of Runcorn is estimated to be 2050 less than at the date of the Census. Again it will be observed that there has been a considerable falling off in the population of the Rural Districts of Chester and Wirral since the Census. This is owing to 1137 persons employed in making the Manchester Ship Canal in the Chester Rural District and 2432 persons similarly employed in the Wirral Rural District having left the County since the completion of the Canal.

The great difference in the density of population in the Sub-divisions of the County has already been noted. In the various districts it is yet more marked. Thus in Altrincham Urban District there are nearly 20 persons to an acre, in Crewe upwards of 17 persons to an acre, in Runcorn upwards of 15 persons to an acre, whilst in one

Urban District, Tarporley, there were more than two acres to a person. In some Rural Districts there were 4 or 5 acres to a person. The persons to a acre in the 3 groups of Districts, in 1896, were —

5 Municipal Boroughs	...	...	10.26	persons
32 other Urban Districts	...	...	3.33	"
13 Rural District	...	...	0.32	"

This is a matter of interest as, other things being equal, the insalubrity of a place may be expected to increase with the density of population.

Births.—The number of births registered in the Administrative County in 1896 was 16,306. The birth-rate was therefore 28.5, the same as in 1895. The birth-rates per 1,000 living were in some few districts high, and in many very low. It will be seen in Table I. that at Middlewich and Northwich the birth-rate was upwards of 38 per 1,000, whereas at Bowdon it was only 14.8 per 1,000. The birth-rate in the Municipal Boroughs was 29.6, in the other Urban Districts 29.2, and in the Rural Districts 26.7. In the whole of England and Wales the birth-rate for 1896 was 29.7 of the population, which is lower than the rate in any other year on record excepting 1894, and 1.3 per 1,000 below the mean rate in the ten years 1886-95. The birth-rate in the 33 great towns in England and Wales (representing in the aggregate a population of 10,846,971) was 30.7.

Deaths.—The number of deaths registered in the Administrative County, in 1896, was 8,957. The natural increase of population (excess of births over deaths) was therefore 7,349, that is 1,088 less than the estimated increase for 1896. The death-rate of the Administrative County was 15.6. There is a considerable difference in the death-rates of different districts. They range from 23.4 at Yeardsley-cum-Whaley and 22.6 at Mottram, to 9.8 at Marple, 9.2 at Alsager and 8.2 at Bromborough. The death-rate in the Municipal Boroughs was 18.3, in the other Urban Districts 15.2, and in the Rural Districts 14.0. In the whole of England and Wales the death-rate for 1896 was 17.1 per 1,000, and this also is lower than the rate in any previous year, excepting 1894: compared with the death-rate in the ten years 1886-95, the death-rate in 1896 shows a decrease of 1.7 per 1,000. The death-rate in the 33 great towns in England and Wales (representing in the aggregate a population of 10,846,971) was 18.9.

Thus, during 1896 the birth-rate in Cheshire was 1.2 below the birth-rate of England and Wales, and the death-rate in Cheshire was 1.5 below the death-rate of England and Wales.

Infant Mortality.—A ready method of estimating the relative prevalence of infant mortality is by calculating the proportion of deaths under one year of age to each 1,000 of registered births. Here again, great differences were recorded in different districts during 1896. The proportion was very high in Mottram (265 per 1,000), Hyde (195 per 1,000), Yeardsley - cum - Whaley (193 per 1,000), and Dukinfield (187 per 1,000), while in some districts, as Marple (41 per 1,000) and Alderley Edge (45 per 1,000), it was exceptionally low. The proportion in the Municipal Boroughs was 159, in the other Urban Districts 139, in the Rural Districts 108, and in the Administrative County 135. The proportion in the whole of England and Wales during 1896 was 148. In the 33 great towns in England and Wales (representing in the aggregate a population of 10,846,971) the rate of mortality among infants under one year of age to each 1,000 births, was 167 during 1896. Thus, in the year under review, the proportion of infants who died in Cheshire was 13 per 1,000 births less than in the whole of England and Wales, and the proportion of infants who died in the Cheshire Municipal Boroughs was 8 per 1,000 births less than in the 33 great towns in the Kingdom.

This is a very different record from that presented in the Report for 1895. Then there was an exceptionally high infant mortality in the whole country and the large towns, and a yet higher infant mortality in Cheshire and the Municipal Boroughs of Cheshire. In 1896 the infant mortality in the whole country and the large towns was about the mean infant mortality in the ten years immediately preceding; while the infant mortality in Cheshire and the Municipal Boroughs of Cheshire was markedly below the mean.

However, though the record in this respect is generally satisfactory, there are still some spots in Cheshire where a high rate of infant mortality is maintained. Of the four Urban Districts mentioned above as having the highest infant mortality in 1896, Mottram is conspicuous—in 1896 there were 265 deaths to each 1,000 births, and in 1892-5 there were 207 deaths to each 1,000 births—yet there is no statement in the Report of the District Medical Officer of Health accounting for this. As to Yeardsley-cum-Whaley although the infant mortality seemed high in 1896, it is too small a district to judge of from a single year's record—in the five years 1892-6 there were only 103 deaths per 1,000 births. The Borough of Hyde infant mortality returns in 1896 are a slight improvement on those in the four years 1892-95, when there were 201 deaths of infants to each 1,000 births. Still it is a serious matter when in any district, year after year, one out of every five infants dies before completing its first year. The Medical Officer of Health

for Hyde is evidently of opinion that this excessive mortality is largely due to ignorance or neglect. He would have mothers better informed on the management of infants, and suggests that the various nurses in the town should be provided by the Corporation with copies of a little pamphlet on this topic, for distribution to suitable persons. Mothers and nurses do a variety of things, from tradition or custom considered necessary, which are really based on ignorance. "Instead," says the pamphlet, "of putting the infant under favourable conditions to live and grow as it was born to do, they begin by doing just the opposite of this. They smother up its face and keep it from the air, which is the first, the most important thing it wants after its entrance into this world. They dose it with medicine, imagining it must require setting right, even before they have found out there is anything wrong with it. They give it unsuitable food and messes which its little stomach was never meant to digest. They try to press its head into shape, or squeeze the bones of the skull together, thinking that it is a great mistake for a baby to have an opening there, and that it must be put right as soon as possible; and some people are so ignorant that they will not wash a baby's head for fear this should cause water on the brain." Then the pamphlet sets forth very explicitly how the infant should be treated, clothed and fed from the first. The second recommendation from Hyde has reference to the subject of infant insurance. It has been said that insured children are sometimes "encouraged to die," so that the friends may get the insurance money, while on the other hand it has been asserted that no such thing has ever taken place. The Medical Officer of Health for Hyde thinks that, to prevent even the accusation being made, parents, instead of putting their infants into burial clubs, should on the birth of an infant insure the life of one of the parents under an endowment policy, payable either at death or on attaining a certain age. There is of course nothing new in this plan, but it is not one adopted by the poor.

The high infant mortality in Dukinfield during 1896 (187 per 1,000 births) compares favourably with the corresponding mortality in this town in the four years 1892-95 (224 per 1,000 births). The cause of the prevalence of so high a death-rate among infants for years is not explained in the local Report, nor is the cause of the decrease in 1896 referred to. There is, however, this fact, the sanitary accommodation provided for a large proportion of the houses in Dukinfield is such as one would look for in a town where the infant mortality was high. "It is well known," writes the District Medical Officer of Health, "that storing refuse in receptacles in close proximity to inhabited houses is an insanitary practice, yet here we have all the filth and

rubbish of the household, in addition to the excreta mixed up together" stored close to the house. So much for the ashpit-privies. As for the water-closets—"at present the closets are flushed into the sewers and then into the river," with the result that the river is "nothing more nor less than an open sewer."

The Medical Officer of Health for Crewe, where the death-rate among infants was not high in 1896, remarks that it is noteworthy how largely infantile mortality in Crewe is dependent on the deaths from diarrhœa. "In 1893 and 1895 diarrhœa was very fatal among young children, and in those years the infantile mortality was very high: in 1894 and 1896 the deaths from diarrhœa were much fewer in number, and the infantile mortality was correspondingly less." As regards the incidence of infantile diarrhœa, that to a great extent depends on ground-temperature. When the 1 ft. and 4 ft. earth-thermometers register respectively as high as 62 degrees and 58 degrees F diarrhœa may be expected, and as long as the ground-temperature remains thus elevated the disease is likely to prevail.

The Borough of Macclesfield had not an excessively high infantile mortality in 1896, as it has had in some recent years. The Medical Officer of Health finds a large proportion of the deaths of infants is attributed to diarrhœa and bronchitis, and believes that the absence of rudimentary knowledge of the conditions of infant life is more productive of these diseases than want and neglect. His view is that "a material lessening of infantile mortality would follow a more general instruction of the older girls in the Continuation Schools in the first principles of infant feeding and rearing, besides other health matters."

Still-born Children.—There is only one reference to still born children, and that is in the Report for the Borough of Crewe, where it is briefly stated that the number of still-born infants brought to the cemetery for burial in 1896 was 65, and that in each of the previous six years a number ranging from 30 to 71 was thus brought for burial. The reason why there is so little information under this head is because still-births are not required to be registered, as they are in some countries. The still-born are not officially recognised, and anyone may bring the little body to a local sexton, usually with a certificate from a midwife or nurse stating that it was still-born, and have it interred in some informal manner as the sexton may see fit. This is not quite safe or seemly, and for the better protection of infant life it is desirable that every birth, still or quick, should be subject to compulsory registration.

Under the present system there appears to be nothing to prevent an infant who has lived a few minutes or a few hours being clandestinely conveyed to a nameless grave; without the cause of death being certified or inquired into. It is also obvious that through there being no register for still-births concealment of birth is facilitated.

Mortality among Old People.—The proportion of old people, among those who died in 1896 is large, thus showing that a considerable percentage of the population attain to ripe age before death removes them. Out of the 8957 deaths registered in Cheshire in 1896, no less than 2257 were 65 years old and upwards, that is, over 25·1 per cent. In the Municipal Boroughs the proportion was 22·4 per cent., in the other Urban Districts it was 23·9 per cent., and in the Rural Districts it was 29·7 per cent.

It will be noticed that while the infant mortality is highest in the Municipal Boroughs and lowest in the Rural Districts, the mortality among old people is highest in the Rural Districts and lowest in the Municipal Boroughs.

Uncertified Deaths.—The deaths not certified by a qualified Medical Practitioner or made the subject of judicial inquiries before a Coroner are ordinarily indicated on the Registrar's returns, but in only a few annual reports is there any reference to the matter. In the two or three large districts where information is given under this head, the proportion of uncertified deaths was small—in Crewe it was 0·7 per cent. of the deaths, and in Wallasey 1·6. In the whole of England and Wales, during 1896, the proportion was 2·2 per cent. It would be well if all Medical Officers of Health in the County would note in their Annual Reports all cases of deaths not certified by registered Medical Practitioners or Coroners.

Coroners' Inquests.—In only a small proportion of annual reports are any particulars as to Coroners' Inquests held during the year. As the verdicts of Coroners' Juries are ordinarily entered in the Registrars' returns, such information as is available might appropriately be included in their annual reports by all Medical Officers of Health in the County.

Zymotic Diseases.—The seven principal zymotic diseases are small-pox, measles, scarlatina, diphtheria, whooping-cough, fever, and diarrhoea; yet when the term "principal zymotics" is used it is not always understood in the same sense. Some Medical Officers of Health include under the heading "diphtheria" all deaths registered as croup; others deaths registered as diphtheria only. Again some Medical Officers of Health include under the heading "fever," typhus, typhoid, continued, relapsing, and

puerperal fevers; others include the first four only, or the first three only. The wise course is to follow the practice adopted in making up the Registrar General's returns. In these summaries croup is included with diphtheria, except of course spasmodic croup, and the term "fever" includes typhus, typhoid, and continued fevers.

In 1896 the number of deaths from the undermentioned zymotic diseases was as follows: 81 measles, 143 scarlatina, 147 diphtheria, 57 membranous croup, 176 whooping-cough, 2 typhus fever, 84 typhoid fever, 2 continued fever, 22 puerperal fever, 18 erysipelas, and 239 diarrhoea. Thus the number of the deaths from the principal zymotic diseases was 931, which is equal to a death-rate of 1.62 per 1,000 living. The principal zymotic death-rate, during 1896, was 2.19 in the Municipal Boroughs, 1.53 in the other Urban Districts, and 1.30 in the Rural Districts.

The death-rate for each of the seven principal zymotic diseases has been calculated for the Administrative County, for the whole of England and Wales, and for the 33 large towns in the Kingdom.

The results are as follows:—

1896.	Death-rates per 1000 living.		
	For Cheshire.	For the whole of England and Wales.	For the 33 large Towns of the Kingdom.
Small-pox ...	0.00	0.02	0.002
Measles ...	0.14	0.56	0.71
Scarlatina ...	0.25	0.18	0.22
Diphtheria & Croup	0.35	0.29	0.38
Whooping-cough	0.30	0.41	0.57
Fever ...	0.15	0.17	0.19
Diarrhoea ...	0.41	0.55	0.79
 7 Zymotic Diseases	1.62	2.18	2.86

This shows that as regards all the seven principal zymotic diseases, except scarlatina, the mortality in Cheshire compares favourably with the mortality in the large towns. As regards measles, whooping-cough, fever and diarrhoea, the mortality was relatively lower in Cheshire than in the whole country: as regards scarlatina and diphtheria (including croup) the mortality was relatively higher in Cheshire than in the whole country. As to small-pox, there was no death from this disease belonging to Cheshire.

The mortality from the seven zymotic diseases, taken together, was equal to a death-rate which was 0·56 lower in Cheshire than the corresponding death-rate for the whole country.

The practice in respect of four of the zymotic diseases (small-pox, measles, scarlatina, and diphtheria), as expressly stated in many of the Reports, appears to be to obtain the isolation of patients as far as practicable, and the disinfection of infected rooms, clothing, bedding, &c., to prevent children belonging to infected houses from attending school, and, if possible, from playing with other children, to endeavour to discover the cause of the disease, to have the premises examined and defects remedied, and, in case of small-pox, to try and induce the inmates of infected houses to be vaccinated or re-vaccinated. In case of an outbreak of measles or scarlatina, it is not unusual to advise the closing of the local schools, and occasionally an outbreak of diphtheria is the cause of this advice being given.

At Crewe a list of infected houses is supplied to the Librarian of the Mechanics Institution, and at Dukinfield cases of infectious disease are notified to the Librarian at the Free Library, so that no book may be lent out to those living in an infected house. During 1896, a Sub-Committee was appointed by the Dukinfield Urban District Council to draw up regulations with the object of preventing the spread of infectious diseases (particularly scarlatina) and these regulations are shortly to be printed and distributed as infectious disease is reported.

A suggestion made by the Medical Officer of Health for the Borough of Hyde that when patients (especially those suffering from scarlatina and diphtheria) are treated at home, notice should be sent to the employers of the parents, does not seem to have been acted upon at Hyde or elsewhere.

Small-pox.—Only 4 cases of small-pox came to the knowledge of the local Authorities during 1896. One of these was a case removed from a ship in the Port of Liverpool to the Port Hospital at New Ferry, where it proved fatal. The death is accounted for in the Report issued by the Port Sanitary Authority and deducted from the mortality returns of this County. Of the remaining 3 cases 2 were notified in the Borough of Crewe and 1 in the town of Runcorn. The first of the Crewe cases was reported on March 29th, and the Small-pox Hospital was at once got into readiness, nurses engaged and the patient removed. She had been vaccinated in childhood, but not re-vaccinated. She remained in Hospital four weeks and made a good recovery. The room she had occupied in her own house was disinfected with a solution of corrosive sublimate by

means of the equifex sprayer, the walls and ceiling were limewashed, and the clothing, bedding, &c., were afterwards disinfected with steam. Every person who had been in contact with the patient during 14 days prior to the attack was re-vaccinated and kept under observation for a fortnight. The cost of measures taken for the prevention of the spread of small-pox in this instance amounted to £40. A second notification of a case of small-pox was received on October 5th, the patient (a man) having lately come from London. The Practitioner who notified the case was averse to its being removed to Hospital. The patient was accordingly isolated at home. He had been vaccinated in childhood but not re-vaccinated. He made a good recovery. As regards the case notified at Runcorn there was considerable doubt as to whether the patient really had small-pox. As a precaution, however, the patient was removed to Hospital, where he remained till recovery. The source of infection could not be traced. According to the evidence of the patient and his friends, he had not been out of the town for at least five weeks prior to his attack, and there seems no reason to call in question these peoples veracity. In all the 3 cases the eruption was discrete and the disease of a mild type.

The small-pox record, in 1896, compares very favourably with that in recent years. In 1895 there were 18 cases notified and 2 deaths; in 1894 there were 38 cases notified and 6 deaths; in 1893 there were 312 cases notified and 32 deaths; and in 1892 there were 82 cases notified and 8 deaths.

Vaccination.—Vaccination returns, as made by the local Vaccination Officers are given by the Medical Officers of Health of Dukinfield and Wallasey. In Dukinfield the return is not satisfactory—17.2 per cent. of those born are reported as successfully vaccinated, and 13.8 per cent. as having died unvaccinated. In Wallasey the return is very satisfactory—86.8 per cent. of those born are reported as successfully vaccinated, and 9.2 per cent. as having died unvaccinated. It is only fair to note that the returns are not strictly comparable, the one from Dukinfield being for the year ending December 31st, 1896, and the one from Wallasey for the year ending June 30th, 1896. Reports from the Borough of Macclesfield and the Stockport Rural District are also satisfactory in respect of vaccination. At Macclesfield only one out of 917 born in 1895 is unaccounted for, and in Stockport Rural District vaccination is regularly attended to and its necessity appreciated by the public.

The issue of the Report of the Royal Commission on Vaccination, and the history of the epidemic of small-pox at Gloucester, a town in a great measure unprotected

by vaccination, drew much attention to the subject of vaccination during 1896. Among the questions discussed is the important one—whether it might not be expedient to allow private practitioners the same fee for a successful vaccination as the public Vaccinator is entitled to. All vaccinations for which fees are claimed would of course be subject to efficient inspection, to insure that a sufficient number of marks, covering not less than half an inch square, be the result in each case. Another question which has arisen is whether the inspection of vaccination, as at present carried out, is sufficiently frequent to guarantee that the vaccination at the public vaccination stations is as perfect as practicable.

Dr. Bond, of Gloucester, a distinguished authority on this subject, recommends Medical Officers of Health to endorse generally the expediency of giving effect to the following proposals of the Royal Commissioners, *viz*—

1. To allow public vaccinators to offer calf lymph as a substitute for human lymph in all cases in which it may be preferred. (At present a public vaccinator is bound to vaccinate with calf lymph, when this is demanded, but he is not entitled to offer it).
2. To extend the period within which a child is at present required to be vaccinated. (It is suggested that the period should be extended from three months to six months).
3. To provide for the medical treatment of children after vaccination, so far as may be necessary to insure good results.
4. To provide for the more effectual supervision of tramps and common lodging-houses.
5. To insure better means than now exist for enforcing the provision of proper accommodation in every sanitary district for the isolation of small-pox and other infectious diseases.

These proposals are judicious and well adapted to produce a good effect. Probably four out of the five will be universally approved of. As to the expediency of proposal No. 2 (extending the period within which a child is required to be vaccinated) there is some difference of opinion among Medical Officers of Health.

It is important to note that the Report of the large majority of the Commissioners conclusively shows that in their opinion it is in the interest of the community that the State should continue to promote vaccination, and that it is inexpedient that the vaccination of children should be left to the uncontrolled option of parents or guardians. While the Report does not contest the absolute right of the State, as the supreme guardian of all children, to enforce their

vaccination, it holds that it is not expedient, in the interest of vaccination itself, for the avoidance of scandal as well as for the discouragement of mischievous agitation, that the vaccination of children should be enforced in the way now provided by law. It is therefore important that any concessions made, for the sake of expediency, should not be of the nature of a permanent abrogation of the right of the State to enforce the vaccination of the child, but only of a postponement of the operation until such time as may be considered suitable for reviving the right of the State to enforce it. Thus any amendment of the law as regards the vaccination of infants should make explicit provision for the revival of this right. The time for revival that has been suggested is the time when the State requires the child to attend school.

Measles.—Cases of measles are not ordinarily reported to the Medical Officer of Health, and he seldom has any intimation of the presence of the disease till it proves fatal. The number of deaths from measles in 1896 in the Municipal Boroughs was 23, in the other Urban Districts 26, and in the Rural Districts 32—in all 81. In 1895 the number was 247; in 1894 the number was 143; in 1893 the number was 149; and in 1892 the number was 162. The mortality from measles in 1896 was therefore less than half the mean mortality in recent years. The disease also appears to have been much less prevalent. Among the districts in which outbreaks occurred may be mentioned the Boroughs of Crewe, Hyde and Stalybridge, the Urban Districts of Mottram, Northwich, Wallasey and Winsford. In portions also of the Rural Districts of Nantwich, Northwich, Runcorn and Tarvin outbreaks occurred. At Crewe the disease was prevalent during the second and third quarters and seriously affected the attendance at school. Nine children died, but considering the extent of the malady the mortality was low. At Hyde, measles prevailed towards the end of the year, and was fatal in 8 cases. “As the people cannot be taught to fear this disease,” writes the Medical Officer of Health, “it spreads rapidly and is very fatal.” At Mottram measles was imported into the district by a child who had been staying with relations at Hadfield, where the disease was epidemic at the time. After sickening he was sent home, the eruption appearing on the following day. Steps were taken to isolate the case and keep all members of the family from school. However, other children, relations of the first patient, some of whom attended school, were unwisely allowed to enter the infected house, and the disease spread rapidly, soon becoming epidemic. It is estimated that in all, not less than 200 cases occurred, and although the disease was generally mild, three deaths took place. As the schools appeared to be the chief

infective centres, Day and Sunday Schools were closed for several weeks. This was followed by an abatement in the epidemic.

In a few other places schools were closed on account of the presence of measles. At Lower Bebington, for example, the schools were closed in February for several weeks; at Winsford, the Meadow Bank School was closed for ten days in May; the Marbury and Tushingham Schools (Malpas Rural District) were closed in March for a short time; in the Nantwich Rural District, the Acton School was closed in September, and the Bunbury Schools were closed in October; in the Tintwistle Rural District, several Day and Sunday Schools were closed for several weeks; and in the Northwich Rural District the Moulton School was closed in February, the Delamere School in April, and the Little Budworth School in September.

Children are most liable to attack in the third, fourth, or fifth year of life, but the disease is most fatal in the second year of life, and more fatal in the first and third years than afterwards. Measles is therefore pre-eminently a disease of very young children. In most of the districts where fatal cases occurred (as in previous years) there was evidence that the mortality was associated with cold-catching. In a large proportion of the death-certificates, bronchitis or pneumonia was added as an accessory cause of death.

A great deal has been written and said in favour of making measles notifiable*; but it is very doubtful if much would be accomplished by this. Measles is not spread by milk and drinking-water, or caused by sewer-gas, and no form of inoculation will protect a child, therefore there is no particular reason why it should be notified. Owing to the infectiousness of measles for three or four days before the appearance of the eruption, and consequently before the malady is recognised, brothers and school-fellows susceptible have probably been infected before the patient can be picked out and isolated. Even if abundant free hospital accommodation were provided (and supplying accommodation for measles is scarcely contemplated in any district), for all who could not be properly isolated at home, so large a proportion of sufferers from measles are children of

* According to some statistics recently published by Dr. Kenwood, measles was compulsorily notifiable prior to March, 1892, and is no longer compulsorily notifiable in the following districts:—Barnard Castle (U.), Barry and Cadoxton (U.), Barton Regis (R.), Bolton (U.), Chesterton (U.), Coventry (U.), Darlington (U. & R.), Dodworth (U.), Faringdon (R.), Hemsworth (R.), Hucknall-under-Huthwaite (U.), Jarrow (U.), Kidderminster (U.), Lincoln (R.), Long Eaton (U.), Mansfield (U.), Mansfield Woodhouse (U.), Neath (U.), Richmond, Yorkshire (R.), Ruskington (U.), Sleaford (U. & R.), Stamford (R.), Sutton-in-Ashfield (U.), Swansea (U.), Todmorden (U.), Uppingham (R.), Warsop (U.), Weymouth (U.), and Wildnes (U.).

tender years, that parents would not generally consent to their removal.

To reduce enormously the mortality from measles, what is needed is not compulsory notification and hospital accommodation, but *the bestowal of a little more care on each child attacked*. Ordinarily measles is a comparatively harmless malady in families comfortably off, but among the poor it is very fatal. The main difference is that well-to-do people understand the importance of keeping the child's body warm, and poor people do not.

Scarlatina, sometimes called scarlet fever, is reported wherever notification of infectious disease is required; thus more is known of the incidence of scarlatina than of measles. In all 3,107 cases were notified in the County, during 1896, and out of these 324 (10.4 per cent.) were removed to hospital for isolation and treatment.

That is to say:—

In the Municipal Boroughs 863 cases were notified and 104 removed (equal to 12.0 per cent.).

In the other Urban Districts 1,429 cases were notified and 196 removed (equal to 13.7 per cent.).

In the Rural Districts 815 cases were notified and 24 removed (equal to 2.9 per cent.).

The proportion of cases removed does not appear to depend so much on the need for removal as the facilities afforded. In Hyde, where a Hospital is provided, out of 117 cases all but 13 were removed; while in Crewe, where the Hospital is not finished, out of 477 cases not one was removed; and in Stalybridge, where there is no Hospital or any prospect of one, out of 208 cases not one was removed. In Bromborough and Higher and Lower Bebington, where the Spital Hospital is available, 43 out of 51 scarlatina cases were removed—84.3 per cent. In Hoylake and West Kirby, also using the Spital Hospital, 31 out of 46 scarlatina cases were removed—67.3 per cent. In Altrincham, where there is a suitable hospital, 26 out of 31 scarlatina cases were removed—83.8 per cent. On the other hand there were in the Borough of Congleton 132 known cases of scarlatina and probably many more unknown cases, in the town of Nantwich 275 cases, in the town of Northwich 205 cases, and in the town of Dukinfield 139 cases, not one of which was removed to hospital, there being no hospital provision in these districts. In many Reports the want of hospital accommodation for isolating initial cases is referred to.

The influence of schools in spreading scarlatina is noted by many Medical Officers of Health, but only in a few instances were schools closed owing to the prevalence of scarlatina. In Nantwich Urban District the schools

were thus closed for six weeks late in September, and shortly after re-opening the disease was so spread that the schools were again closed for six weeks. In October the Delamere Street School, Winsford, was closed for 20 days. Some rural district schools were closed, as the schools at Winnington Park, Bramhall, Farndon, Aldford, and Burwardsley.

There are interesting notes in some Reports, showing various ways in which it appeared that scarlatina was spread, irrespective of school influence. The Medical Officer of Health for Hyde believes that many mild cases were unreported through not being seen by Medical Practitioners, and such cases were occasionally discovered in a peeling stage. He is of opinion also that disinfection as carried out is unsatisfactory, and will never be quite successful till he is able to have all persons who have been in contact with patients thoroughly disinfected at the Hospital. The same Medical Officer cites a case in which peeling recommenced after the peeling had finished and the patient had been examined and pronounced free from infection. The Medical Officer of Health for Ashton-upon-Mersey regards the annual incidence of "The Wakes" as a source of danger, in 1896 scarlatina and diphtheria appearing immediately after this yearly gathering of people. The Medical Officer of Health for Dukinfield seems to doubt the efficiency of disinfection as practiced, and recommends that baths be provided to disinfect those in contact with patients. In the town of Nantwich the remarkable mildness of the malady led the parents to regard it as scarcely serious, so that instructions given to prevent the spread of the disease were not carried out. Scarlatina was brought to Disley from an adjoining district by members of a family who worked there. In the Macclesfield Rural District many cases of scarlatina appeared in houses in which sanitary defects were discovered. The Medical Officer of Health for Northwich Rural District refers to the presence of a large number of susceptible children in a Works village and the careless intercourse between families as factors in the spread of scarlatina locally. The Medical Officer of Health for Stockport Rural District draws attention to the risk of spreading disease by children from infected houses being allowed to play in the street with others.

One of the many scattered cases which occurred in Nantwich Rural District was in a partially-pulled-down house and as there was no hospital in the district to which the child could be sent, the pulling-down of the house had to be stopped and the portion that remained made to do duty as a temporary hospital.

In the town of Runcorn was a case which attracted considerable attention. A young girl developed well-marked scarlatina in January and passed through the usual phases of the disease satisfactorily. In May she again contracted the disease having all the signs and symptoms a second time. She made a good recovery. A patient peeling again after recovery is unusual, but for a patient to go through two attacks of scarlatina in the course of six months is much more exceptional.

It is perhaps well to draw attention here to a prosecution undertaken at Winsford for exposing an infectious child. The patient had scarlatina on August 31st, and while still infectious was removed from one street to another where he communicated the disease to others. The person in charge of the child was accordingly proceeded against for exposing it while in an infectious state. A conviction was obtained and a nominal fine inflicted.

The number of deaths from scarlatina, in 1896, in the Municipal Boroughs was 49, in the other Urban Districts 62, and in the Rural Districts 32—in all 143. This is 4·6 per cent. of the known cases of the disease. In 1895 the deaths were 4·4 per cent., in 1894 they were 4·5 per cent., and in 1893 they were 4·8 per cent. of the known cases. The mortality per case in 1896 is therefore just above the mean of the three years 1893-95. The proportion of cases removed to hospital in 1896 (10·4 per cent.) is very small. In 1895, 18·3 per cent. of the known cases were sent to hospital; in 1894, 15 per cent. of the known cases were sent; and in 1893, 10·5 per cent. were sent.

Return Cases.—This term is used to indicate cases re-appearing in households shortly after the return of a patient from Hospital. For instance, in Tarvin Rural District 4 cases in a family, one of which proved fatal, were due to infection brought by a member of the family who had been the six weeks previous to his coming home in a Fever Hospital in London. No such case is referred to in any Report for 1896, as the experience of a Cheshire Hospital, but in past years cases have occurred on two or three occasions in connection with the Hyde and Spital Hospitals. It is very difficult to account for these, especially as great care is taken to keep patients in till peeling is finished, and any discharge they may have had from the ears or nose has ceased. In a town, in which scarlatina is epidemic, it may be impossible to say if a recurrence in the same house is the result of infection from a recently returned member of a family from hospital or an independent infection from outside. However, when return cases occur in rural districts the evidence may be very strong either that the returned patient was himself infectious or that infectious particles were retained in his clothes.

Diphtheria and Croup are diseases which appear to be notified very irregularly. During 1896 there were 668 cases of diphtheria notified and 147 deaths, while there were 53 cases of croup notified and 57 deaths. Of the diphtheria cases 116 were removed to hospital, but no case notified as croup was removed. In detail the record stands as follows:—

1896.	Cases Notified.			Deaths.		
	Diphtheria.	Croup.	Total.	Diphtheria.	Croup.	Total.
Municipal Boroughs ...	308	20	328	84	19	103
Other Urban Districts ...	193	18	211	25	16	41
Rural Districts	167	15	182	38	22	60
Total ...	668	53	721	147	57	204

Thus taking the two diseases together (for there can be no doubt that what is called croup is often true diphtheria) in the Municipal Boroughs 31.4 per cent. of the known cases died, in the other Urban Districts 19.4 per cent. of the known cases died, and in the Rural Districts 32.9 of the known cases died. The death-rate per 1,000 living in the Municipal Boroughs was 0.70, in the other Urban Districts 0.16, and in the Rural Districts 0.32.

Cases of diphtheria or croup were reported in all the Municipal Boroughs, and in all the other Urban Districts except Alsager, Bollington, Bowdon, Buglawton, Cheadle and Gatley, Knutsford, Lymm, Mottram, Neston and Parkgate. Cases were reported in all the Rural Districts.

More than one-third of the deaths and more than one-third of the cases of the two diseases reported in the whole Administrative County occurred in Macclesfield. The epidemic of diphtheria, which commenced in this Borough in June, 1895, continued throughout the year 1896. In the nine years, 1886-1894, the total number of cases of diphtheria and croup notified was 29, that is 3.2 a year, but in 1895, 123 cases were notified, and in 1896, 245 cases were notified. The epidemic was preceded by a prevalence of sore throats which were not at the time recognised as diphtheritic. The symptoms of the disease are so uncertain and variable that in many cases it is impossible, even for the most experienced physician, to decide by the appearance of the throat whether a case be diphtheria or some form of less infectious inflammation of the throat. Not having the apparatus necessary for such investigation, the Medical Officer of Health sent material from some of the doubtful cases to the British Institute of Preventive Medicine, and received reports

thereon. Still, by the time the nature of the disease was certainly determined it was wide-spread. There was no definite grouping of cases round any particular focus of infection even at the first, because diphtheria had become prevalent in a mild form before cases were recognised. Under these circumstances the efforts made to check the spread of the disease were not markedly successful. Still, much was attempted ; patients were isolated at home as far as practicable, others were sent to hospital, children from infected houses were kept from school, infected rooms and their contents were disinfected, &c. One school was closed early in December, 1895, till after the Christmas holidays, and at all the Elementary Schools and some Sunday Schools the Christmas holidays were prolonged for a fortnight. During the time the schools were closed there was a slight fall in the weekly number of cases notified, but in the latter part of January and in February the number increased again. The only other school-closing done at the instance of the Authority was that in March a School was closed for three days for disinfection, and on September 21st a school was closed for three weeks. In 1895 the part of the town most affected was West Macclesfield, in 1896 the disease spread more fully in East Macclesfield and Sutton. Of the 85 separate families affected in 1895, 20 lived in houses whose sanitary condition is classed as "indifferent," and 20 in houses whose sanitary condition is classed as "bad." Of the 206 separate families affected in 1896, 46 lived in houses whose sanitary condition is classed as "indifferent," and 27 in houses whose sanitary condition is classed as "bad." In 1896, therefore, a smaller proportion of affected families were located at insanitary houses than in 1895. On the question of the relationship of insanitary and damp dwelling-house to diphtheria, the Medical Officer of Health writes :— "Although it cannot be proved definitely that these conditions can produce infection *de novo*, there is no doubt that the children living in such surroundings are more liable to attack when infection is rife and that the symptoms are often more violent." There seems no evidence of the disease being spread in any other way than by personal infection. As there were 39 deaths in 1895 the mortality was in that year equal to 31.7 per cent. of the known cases. The 72 deaths which occurred in 1896 are equal to 29.3 per cent. of the known cases. This does not represent the true case-mortality in either year, as a large number of mild cases did not come under the notice of medical men and were not notified. The diphtheria death-rate, during the period the disease was epidemic, that is to say during the latter half of 1895 and the whole of 1896 was 2 per 1,000 living, per annum. In 1895, 29 cases were isolated in Hospital ; and in 1896, 52 cases were isolated.

Except in Macclesfield Borough there was no extensive prevalence of the disease in the County. There were, however (as often happens with diphtheria), some serious outbreaks in more or less remote places. At Spurstow (Nantwich Rural District), for instance, the disease broke out in the late autumn. The initial case appears to have been a labourer's infant whose illness was not recognised as serious enough to require medical advice, so that when death took place (on October 8th) it formed the subject of an official inquiry, and the Coroner's jury decided that death was due to "natural causes." Then the father of this infant sickened, and died on the 15th of the same month, the death being certified "quinsy." The third death in this house was that of a little girl (age 5), who died on the 26th. Meanwhile the disease had appeared at another cottage in Spurstow, and two little girls aged 6 and 7, died respectively on the 16th and 20th. These cases occurred in low thatched cottages, ill-ventilated, with no proper drainage, and a water supply from dip-wells in fields, liable to pollution. There was yet another case at Spurstow, which appeared a little later and proved fatal on December 12th. About the same time (that is, between October 20th and December 12th) there were 5 fatal cases of diphtheria at Bunbury, which is very near Spurstow.

Another outbreak occurred at about the same period at Sutton (Runcorn Rural District), there being in all 12 cases (3 fatal) in 5 cottages. The cottages were newly built and little fault could be found with their sanitary arrangements, but the occupants had been using an impure drinking-water, and to this the origin of the disease was attributed. There was another outbreak in September and October at Five Crosses (in the same Rural District), there being 8 cases (4 fatal) in 4 cottages. It is thought this may have been connected with 3 previous cases at Frodsham in August and September, and the general sanitary condition of the cottages is so unsatisfactory that the occupants are seldom free from disease.

Somewhat earlier in the year was an outbreak at Barnton (Northwich Rural District) there being in all 7 notified cases, 2 of which were fatal. The Medical Officer of Health, after a visit of inspection, reported that Barnton was "full of sore throats," and thinks that there were many slight cases not reported. Here it was found impossible to associate any of the cases with foul sewers, school-attendance, water-supply, or milk-supply, and it seemed that the disease may have been due to some of the obscure causes (such as subsoil temperature and height of subsoil water) which are not fully understood.

In many of the Reports are notes of sanitary defects discovered in houses where cases of diphtheria appeared, and in a few are references to bad drinking-water as a probable cause of the disease. There are several instances recorded in which the disease was imported into one district from another, the person who imported the disease being probably unconscious of it. The spread of the disease by personal infection is frequently referred to, especially at schools, though except at Macclesfield Borough and at Alvanley (where the disease invaded a school-house) no schools appear to have been closed on account of diphtheria by the action of the Authority. In the Report of the Wirral Rural District it is mentioned that irregularities in connection with the emptying of ashpits were suspected of contributing to the spread of diphtheria. The refuse had been tipped in the middle of the village, at a spot frequented by children.

The Diagnosis of Diphtheria.—The need of assistance in diagnosing cases which may or may not be diphtheria is generally recognized by Medical Officers of Health; and expression is given to this need in several reports. The Medical Officer of Health for the Borough of Macclesfield reports that a small laboratory where bacteriological work could be done would be very useful to him. The Medical Officer of Health for the Borough of Hyde would have periodical inspection of schools to ascertain if any of the pupils are suffering from sore throat, and if any be found so suffering and there is any doubt as to the nature of the malady, throat secretions from the case or cases should be bacteriologically examined and reported upon. The Medical Officer for Bollington points out that at the Owen's College, Manchester, bacteriological examination of material from doubtful cases of diphtheria and typhoid fever is undertaken and suggests that it might be advisable for his District Council to arrange for infectious material from doubtful cases occurring in Bollington being sent to a bacteriological laboratory for examination. The Medical Officer of Health for the Borough of Crewe has gone a step further than this. In December he received permission from his Heath Committee to submit material taken from the throats of persons suspected of having diphtheria to Professor Delépine, of the Owen's College, for bacteriological examination. A copy of a letter sent during December to every Medical Practitioner in Crewe is printed in the summary of the Crewe Health Report. This explains exactly what it is proposed to do, and the manner of doing it.

Whooping-cough is not notified and the extent of its prevalence has to be gauged by the death record. The number of deaths in 1896 in the Municipal Boroughs was

53, in the other Urban Districts 67, and in the Rural Districts 56—in all 176. The number of deaths from this cause, in 1895, was 110, the number in 1894 was 217, and the number in 1893 was 120. The disease was specially prevalent in the Borough of Stalybridge, and was prevalent also in the Borough of Macclesfield, in Dukinfield, Wallasey and Hoylake and West Kirby. In the two last named districts schools were closed on account of the disease. Some village schools were closed, for the same cause, in the Rural Districts of Nantwich and Bucklow. Whooping-cough is very difficult to deal with from a public health point of view. Its onset is insidious, and the catarrhal stage (during which the symptoms are not characteristic) commonly lasts nearly a week. As a matter of fact little seems to be done throughout the County to stop the spread of this disease. Still there is no doubt about the infectiousness of whooping-cough, or the need of keeping infected children from others and in particular from school. The mortality from whooping-cough would probably be much reduced if those in charge of children regarded the disease more seriously, and had the patients properly nursed and kept warm. And this mortality needs reducing, for whooping-cough is the most fatal of all infectious diseases of children under five years of age.

Fevers.—In the official form, furnished to Medical Officers of Health by the Local Government Board, and used for making mortality returns, “Fevers” appears at the head of five columns, and the five sub-headings are “Typhus,” “Enteric or Typhoid,” “Continued,” “Relapsing,” and “Puerperal.” Under relapsing fever no case was notified. There were 7 cases of typhus fever notified and 2 deaths. There were 497 cases of typhoid fever notified and 84 deaths. There were 26 cases of continued fever notified and 2 deaths. There were 46 cases of puerperal fever notified and 22 deaths.

Typhus Fever is happily now so uncommon that many practitioners have never seen a case. It is associated with overcrowding and uncleanliness, and wherever the disease is epidemic these conditions obtain. Although typhus fever is ordinarily very severe when attacking adults, children often have it lightly, so that if the first cases are children the true nature of the disease may not be suspected for some time. The disease appeared in the Runcorn Rural District in midsummer 1896, for the first time since the Medical Officer’s connection with the district in 1883. A more or less vagrant family came to Sea Lane, Halton, from a part of Liverpool infected with typhus fever, and shortly after their arrival typhus fever broke out among them, affecting the whole imported family—7 in all. At first the

illness was regarded as scarlatina, and one or two cases were thus reported, then a death occurred and this was certified and registered as scarlatina. About this time the patients changed their medical attendant, and the outbreak was reported as typhus fever, 2 of the patients dying, and their deaths being certified and registered as typhus. There seems no doubt that the whole family suffered from typhus fever alone, and that the first death was really due to this disease, but as it was certified and registered as scarlatina, it must appear thus in the returns. It is at least satisfactory, writes the district Medical Officer of Health, that the disease did not arise from any cause within the district, and that having arisen it did not spread beyond the two houses occupied by the newly arrived family. Nearly all the bedding, clothing, &c., belonging to the infected family were burned, and compensation made to the patients.

Typhoid and Continued Fever may be considered together, as it seems probable that a large proportion of cases notified as continued fever are really typhoid fever. Of the 523 cases notified in the County during 1896, 113 (21.6 per cent.) were removed to hospital. That is to say:—

In the Municipal Boroughs, 99 cases were notified and 2 removed (nearly 2 per cent.)

In the other Urban Districts 292 cases were notified and 81 removed (equal to 27.7 per cent.)

In the Rural Districts 132 cases were notified and 30 removed (equal to 22.7 per cent.)

As in previous years a large number of cases (113) occurred at Wallasey. There was also some prevalence of the disease in the Municipal Boroughs of Crewe, Hyde, Macclesfield and Stalybridge, in the towns of Runcorn, Dukinfield and Northwich, and in portions of the Rural Districts of Chester, Bucklow, Northwich, Runcorn and Stockport.

That typhoid fever was in 1896, and has been for some years past, exceptionally prevalent at Wallasey is manifest. The mean typhoid fever death-rate in the ten years 1887-96 is 0.39 per 1,000 living in this District, while the fever death-rate (including typhus, typhoid and continued fevers) during the same ten years is only 0.18 per 1,000 living in the whole of England and Wales—that is less than half the local rate. A study of the localities in which the 113 cases occurred in 1896, writes the district Medical Officer of Health, is very interesting, because in them the drainage is known to be bad or to have been bad recently. The work of reconstructing the worst of the Wallasey sewers has now been going on some time, but it is pointed out that it may be more than a year after a new sewer is laid before improvement is seen, for when once

typhoid germs have impregnated the ground it takes a long time before it is free from them. What took place at Sutton's Cottages furnishes a good illustration of the connection between typhoid fever and bad drainage. Three cases were notified between August 15th and 17th, on which the Surveyor's Department were asked to inspect the sewer running through the back-yards of the cottages. An examination was made at one point, about the middle of the sewer, and it was reported to be in good condition. However, owing to various defects in the sanitary fittings of the cottages where the fever occurred, discovered by the Sanitary Inspector, the Agent of the property was seen and agreed to put in proper fittings and relay the whole sewer. The old sewer was then exposed—it was obstructed and badly jointed and some of the pipes were broken. The surrounding ground was impregnated with sewage, which was actually trickling into the cellars of two of the houses. The above is no isolated instance of the intimate connection between shameful sanitary arrangements and this disease. Indeed the Medical Officer of Health states that his list of the defects found at houses in which cases of typhoid fever occurred "is far too lengthy to be reproduced." In all 10 of the cases in this district proved fatal.

The number of cases at Crewe is not known as notification was not compulsory till the last quarter of the year. However there were 9 deaths from typhoid fever, of which 6 were in May, June and August. In this Borough precautions are taken (as they should be in all districts) to destroy the excreta. Immediately a case is notified, printed instructions as to nursing, and a covered bucket containing peat and a disinfectant, are sent to the house indicated, with instructions to place the patient's discharges in the bucket, which is removed and replaced by a fresh bucket daily. The contents of these buckets are taken to the sewage farm and burnt in a small cremator at the pumping-station.

Among 29 cases reported at Hyde there were 5 deaths—a large proportion. Two cases were of special interest. In one the skin of the patient was peeling so much that he was sent into Hospital as a case of scarlatina, but after careful observation for a short time the characteristic symptoms of typhoid fever were evident. The second case was interesting as it was difficult to assign any other cause for it than that the patient had the disease communicated to him by eating sewage-polluted oysters. The Medical Officer of Health for Hyde suggests the expediency of all local Authorities joining in requesting the Local Government Board to make stringent regulations for the management of oyster beds so as to minimise as far as possible the risk of typhoid fever being conveyed thereby.* This is an

* An interesting Report, bearing date October, 1896, has recently been issued by the Medical Officer of the Local Government Board, "On Oyster Culture in Relation to Disease." This Report, and the four papers appended thereto furnish a large amount of useful information on this subject.

important topic and doubtless deserves consideration. Hitherto the belief has been that oysters were unwholesome only from May to September, when oysters in our waters are either shedding their spawn, preparing to do so, or recovering from the effects of having done so. Indeed the legal "close time" is much more limited than this; for it is only from May 14th to August 4th that native oysters from our own shores are precluded from being sold for food, and only from June 14th to August 4th that "deep sea" oysters are precluded from being sold for food.

In the town of Runcorn there were 22 cases reported as typhoid fever and 22 as continued fever, and 5 deaths in all. The disease prevailed most in the autumn. Several cases were imported. In one instance the disease appeared to be communicated from patient to patient.

Cases of typhoid fever which were associated with insanitary premises are referred to in the Reports from the Borough of Congleton and the Urban Districts of Bollington, Hollingworth and Northwich, and in many Rural Districts. In Mottram 4 or 5 cases occurred in 1896 which appeared to be connected with cases recorded in the autumn of 1895. The excreta of the earlier cases had "been buried in the middens," and when the noxious contents of such middens came to be disturbed, what was more probable than the re-appearance of the disease? In the report from Cheadle and Gatley is a reference to a case "which was thought to have been caused by some of the food supply coming from a house infected with typhoid fever." Cases in which typhoid fever appeared due to the use of polluted drinking-water occurred at Bollington, Blackenhall (Nantwich Rural District), Winnington (Northwich Rural District), and at the County Asylum, Upton (Chester Rural District). The outbreak at the Asylum, which was carefully investigated, is specially instructive. Seventeen persons presented, more or less fully, the characteristic symptoms of the disease between March 10th and 15th; there was thus a strong presumption that they were infected about the same time, and it was at least probable from a common source. On inquiry it appeared that a nurse attendant, who was allowed to go home on account of illness on February 26th, had afterwards developed typhoid fever. On examining the water-main there was distinct evidence of surface water getting into it by means of a fire-plug box, the ball-valve in which had dropped when pressure was taken off in the night. The water so admitted had run off a road repaired with cinders from a midden, which seems to have been specifically infected on or about February 24th or 25th. It is well to mention that every fire-plug valve in the Asylum has since been covered with a proper cap, which absolutely closes the orifice and could be easily removed in case of fire.

As typhoid fever is commonly latent for a fortnight, and even after the attack commences the patient may be walking about and following his ordinary vocation for several days, it is not surprising that many cases of the disease were imported. Fourteen cases appear to have been transferred from one district to another in the County, and 10 cases to have been imported into the County from without. Cases are reported as having come from Manchester, Salford, Oldham, Latchford, Isle of Man, London, and Dublin. In Sale a patient had been sent to Monsall Hospital (Lancashire) suffering from erysipelas, and about a fortnight after being discharged he developed typhoid fever.

The number of deaths from typhoid fever, in 1896, in the Municipal Boroughs was 21, in the other Urban Districts 41 (including two registered as continued fever) and in the Rural Districts 24—86 in all. Thus 16·4 per cent of the known cases of the disease were fatal. In 1895 there were 76 deaths—17 per cent. of the known cases. In 1894 there were 81 deaths—18 per cent. of the known cases. In 1893 there were 118 deaths—15·4 per cent. of the known cases.

Puerperal Fever.—Nearly half the reported cases of this disease proved fatal. In the Municipal Boroughs there were 10 cases and 2 deaths. In the other Urban Districts 17 cases were notified and there were 9 deaths. In the Rural Districts 19 cases were notified, and there were 11 deaths. There is no sufficient reason to believe that the case mortality was really about 48 per cent. The truth is that puerperal fever is very irregularly notified, and the cause of this is not far to seek. The malady is not a specific fever occurring in lying-in women, but a puerperal septic disease caused by infectious germs directly conveyed to the patient by defiled hands, sponges, &c., or otherwise. It follows therefore that it is of more frequent occurrence among those who from poverty or other causes are without skilled attendance and nursing. Thus numbers of cases are never seen by a medical practitioner, and in many instances the first intimation the Medical Officer of Health has of a case is after the death of the patient. Rarely indeed is it practicable to send a case of puerperal fever to hospital (not one was sent in 1896), but possibly something more might be done in impressing upon the poor the necessity of infinite cleanliness in the treatment and environment of lying-in women. In only a single case were sanitary defects noticed on premises where the disease occurred. In two cases of puerperal fever (not in any way connected) in the Chester Rural District, it is stated that the bedding, &c. was destroyed and compensation given. It might be wise to do this in all cases. A fatal case occurred in the practice

of a midwife at Bollington, and another fatal case in the practice of a midwife at Tintwistle. In both cases steps were taken to prevent the disease being spread. Other nurses in attendance on puerperal fever patients were cautioned not to attend further cases till they and their clothes had been disinfected, and a reasonable time had been allowed to elapse.

In some instances midwifery nurses who have been in contact with puerperal fever cases at Hyde, have applied at the Hospital to be disinfected before proceeding with work, and the District Medical Officer of Health desires it to be known that any nurses attending such cases will be disinfected on application.

Diarrhoea.—The last of the seven principal zymotic diseases is associated in the official form for mortality returns with dysentery, but the latter is so seldom the cause of death in this country that in ordinary years it may be disregarded. Diarrhoea is not notified, and the extent of its prevalence, year by year, is measured by its death record. In the Municipal Boroughs there were 70 deaths ascribed to diarrhoea, in the other Urban Districts 134 deaths, and in the Rural Districts 35 deaths. Out of the 239 deaths in 1896, 203 were of children under five years of age. The number of deaths from diarrhoea in 1895 was 453, the number in 1894 was 168, and the number in 1893 was 652. The diarrhoea mortality therefore varies much from year to year and was not high in 1896. This disease prevails to some extent every autumn, and is associated with high temperature and putrefactive changes in food. As indicating the connection of this disease with the food of those who suffer, it has often been proved by statistics to be specially a disease of hand-fed infants. As illustrating the concurrence of infantile diarrhoea with a continued elevation of the temperature of the earth, the Medical Officer of Health for Crewe notes that that during July, August and September in 1895, when diarrhoea was prevalent, the 1 ft. and 4 ft. earth thermometers registered respectively, with only the slightest variations, 62 degrees and 58 degrees Fahr., and that when this temperature suddenly fell during October, the deaths of infants from diarrhoea ceased. In 1896, however, the temperature of the earth at these two depths did not reach these points until the middle of July, and only remained elevated till the end of August. It was during these six weeks that 18 of the 19 deaths from infantile diarrhoea were registered. He also shows how in a district containing 271 houses, where the deaths from infantile diarrhoea had been in excess every summer, he had the closets specially cleansed and disinfected in 1896, with the result that no death was recorded therein from infantile diarrhoea. In some other districts also the diarrhoea death-rate was much below the local average—in Hyde, for

instance and Dukinfield and the Runcorn Rural District. The Medical Officer of Health for Northwich Urban District points out that although the local diarrhœa death-rate is not high (0.50) if the deaths certified as due to "enteritis" among children under five years old were added thereto, the death-rate would be 1.29. In Wallasey the diarrhœa death-rate is fairly high (0.72), but the Medical Officer of Health for this district points out that there were 7 deaths of infants in July and August, ascribed to "enteritis," and if these were added, the death-rate would be 0.89. In Altrincham, the death-rate from diarrhœa alone was 1.21.

Erysipelas is notified, but not as thoroughly as most notifiable diseases. According to the Medical Officer of Health for Runcorn Urban District, the cases notified under this heading "may be anything from a pimple on the nose to a severe constitutional attack." Certainly cases which it would be difficult to maintain were true erysipelas are occasionally reported as erysipelas. However, as the disease is a specific infectious one characterised by spreading inflammation of the skin, due to the presence of a micro-organism, and especially liable to attack debilitated persons, puerperal patients and those suffering from wounds, it is expedient and necessary that it should be notified. Provided all the actual cases of the disease are reported, it is of little moment if an occasional case of simple inflammation of the skin is notified in error. Erysipelas is undoubtedly associated with insanitary conditions, and this is witnessed to in two or three Reports. Cases notified should therefore be investigated as carefully as cases of diphtheria ordinarily are, premises where the disease arises should be examined, defects remedied, and disinfection undertaken. At present in many districts very little is done to combat erysipelas or prevent its spread, and in some districts nothing is done. As indicating the necessity of visiting cases of this disease notified, the Medical Officer of Health for Tarvin Rural District reports that a case notified to him, in 1896, was found being nursed by the village midwife. During 1896, there were 72 cases notified and 5 deaths in the Municipal Boroughs, there were 205 cases and 12 deaths in the other Urban Districts, and there were 78 cases and 1 death in the Rural Districts. Of the 355 cases reported only 6 were removed to hospital. In 1895 the number of cases notified was 309 and the number of deaths was 20. In 1894 the number of cases notified was 397 and the number of deaths was 23. In 1893 the number of cases notified was 538 and the number of deaths was 27.

Influenza.—The official form on which the mortality returns from districts are made does not indicate that a separate return in the case of influenza is required, but the heading of one column "is left blank for the insertion of influenza or any other disease which it may be thought desirable to record." In

a large number of the returns from districts in the Administrative County, for 1895, the blank heading was filled in "influenza," and in none of them was it filled in with the name of any other disease, so that in that year, for the first time, there was a fairly accurate record of the deaths ascribed to influenza. Prior to 1895 the deaths from this disease have for the most part been included (in the official forms) in the figures which refer to all other diseases. In order to obtain a still more accurate return for 1896 a circular letter was addressed to all the Medical Officers of Health in the County requesting that the deaths from influenza might be recorded. The number of deaths in the Municipal Boroughs was 11, in the other Urban Districts it was 14, and in the Rural Districts it was 14. Of the 39 deaths, in 1896, only 5 were of children under five years of age, and a large number were of persons well advanced in life. In 1895, the deaths due to influenza numbered 157, *i.e.*, four times as many as in 1896.

There is no doubt about the infectiousness of influenza, and this infectiousness appears to continue from the onset of the disease till the patient is sufficiently convalescent to resume his ordinary occupation, but there is very little that the local Authority can do to limit the spread of the disease when it has once appeared in a district. Compulsory notification, even if practicable, would be of very little use, and certainly hospital provision could not be made for cases. Still the public should be informed that the infective particles are present largely in what is discharged from the lungs and nasal passages, and that these should not be allowed to dry and scatter infection, but be at once burnt, or received into water and emptied down a drain leading to a sewer. The public should be informed also that anyone having influenza should keep to himself as much as possible, especially avoiding assemblages of people. Of course after recovery of the patient, infected rooms and clothing should be disinfected.

Rheumatic Fever (sometimes called acute rheumatism) used to be classed with zymotic diseases, but it is now generally regarded as a constitutional disease and classed with gout, cancer and the various forms of tuberculosis. There were 13 deaths ascribed to this cause in the Municipal Boroughs, 13 in the other Urban Districts, and 7 in the Rural Districts. The number of deaths from this cause in 1895 was 23, the number in 1894 was 32, and the number in 1893 was 37. Sanitary Authorities cannot do much to reduce the mortality from this disease, except in so far as they can prevent the building of damp houses on damp sites.

Phthisis.—In the Municipal Boroughs phthisis was certified as the cause of 214 deaths, in the other Urban

Districts it was certified as causing 265 deaths, and in the Rural Districts as causing 176 deaths. In the Municipal Boroughs the death-rate was 1.46, in the other Urban Districts the death-rate was 1.09, and in the Rural Districts the death-rate was 0.95. The phthisis death-rate for the whole County, in 1896, was 1.14. This death-rate for the whole County, in 1895, was 1.22; in 1894 it was 1.12; and in 1893 it was 1.25. The phthisis death-rate for the County in 1896 is thus lower than the mean in recent years; however a very high rate is still returned from the Borough of Macclesfield (2.19) and a somewhat high rate for the Borough of Stalybridge (1.49).

In many districts handbills giving general rules to be observed with reference to sufferers from this disease, have been issued and are distributed as occasion requires. The bills are drafted on the lines of the "Memorandum on Precautions against the Infection of Phthisis or Consumption," issued by direction of the County Council in February, 1894. These handbills are all calculated to impress upon those who receive them that phthisis is a distinctly infectious disease, and that active measures should be taken to prevent its spread. In the handbill appended to the Report from the Borough of Crewe it is recommended that the carpets, curtains, bed-hangings, bedding, &c., of a person suffering from consumption should be sent to the steam-disinfector, and that the wood-work, walls and ceiling of the patients' room should be disinfected under the direction of the Sanitary Inspector. The Medical Officer of Health for Crewe notes that during 1896 "in an increasing number of cases the bedding, &c., and the houses occupied by consumptive patients have been disinfected."

The Medical Officer of Health for the Urban Districts of Knutsford, Middlewich, and Winsford, and the Rural Districts of Bucklow and Northwich reports that the several Councils of these districts have accepted his advice to offer to disinfect after death from phthisis.

The Medical Officer of Health for the Borough of Macclesfield refers to the generally accepted opinion of medical men that the milk of tuberculous cows is the cause of much consumption, especially among children; and suggests that Sanitary Authorities should by their influence support and give preference to dairymen who supply milk from herds which are periodically tested and certified as free from consumption.

Bronchitis, Pneumonia, &c.—The group of lung diseases which are more or less directly the result of catching cold (bronchitis, pneumonia and pleurisy) accounts for a very large number of deaths year by year. In 1896 there were 589 deaths due to these causes in the Municipal

Boroughs (equal to a death rate of 4.04), in the other Urban Districts there were 620 deaths due to these causes (equal to a death-rate of 2.56), and in the Rural Districts there were 423 deaths (equal to a death-rate of 2.29). This shows, as the record of previous years has shown, that the mortality was relatively higher in the Municipal Boroughs than in the other towns, and relatively higher in the towns than in the Rural Districts. The death-rate of the whole County was 2.85 in 1896. This death-rate was 3.28 in 1895, 2.79 in 1894, and 3.62 in 1893.

Among the highest death-rates from these causes were those returned at Stalybridge (5.20), and Hyde (4.75).

Heart Disease.—In the Municipal Boroughs 214 deaths (equal to a death-rate of 1.46) were due to this cause; and in the other Urban Districts 281 deaths (equal to a death-rate of 1.16) were due to this cause. In the Rural Districts 304 deaths (equal to a death-rate of 1.65) were due to this cause. The death-rate for the whole County was 1.39 in 1896. This death-rate was 1.45 in 1895, 1.32 in 1894, and 1.37 in 1893.

Deaths from Injuries.—Under the heading “Injuries” are classed all death-causes which are the direct result of physical or chemical forces—whether due to accident, negligence, manslaughter or suicide. In the Municipal Boroughs, 54 deaths (equal to a death rate of 0.37), were due to injuries; in the other Urban Districts 93 deaths (equal to a death-rate of 0.38) were due to injuries; and in the Rural Districts, 94 deaths (equal to a death-rate of 0.51) were due to injuries. The death-rate for the whole County was 0.42 in 1896. This death-rate was 0.52 in 1895, 0.43 in 1894, and 0.47 in 1893. It is remarkable how much higher this death-rate was in the Rural Districts than in the towns. Yet in one town this death-rate was very high—in Runcorn it was 1.27. Most of the deaths from injuries were, of course, due to accident, but the proportion is not stated. Indeed, there is no way of ascertaining this, for even when inquests are held, such verdicts as “found dead,” “found drowned,” &c., are often given, and throw no light on the question—Accident or otherwise?

Deaths from “Natural Causes.”—A certain number of deaths are registered, year after year, as due to “natural causes,” all being deaths the causes of which have been inquired into at a Coroner’s Court. These, and deaths ascribed to “the visitation of God,” cannot be classed, and go to increase the total of deaths coming under the general heading “all other diseases.” Probably all that is meant by “natural causes” is that the death was not due to violence, and in most cases a little further investigation would have

shown the particular natural cause—syncope, heart disease, apoplexy, or whatever it may have been. The Medical Officer of Health for the Borough of Hyde, commenting on this, writes :—“ The usual verdict of ‘ natural causes ’ is of absolutely no value whatever for statistical purposes, and even when a guess at the cause of death is made without a post-mortem examination or scientific medical evidence, the result is hardly any better. How, for instance, is a Coroner’s Jury, in the absence of any medical help, to distinguish (by the mere momentary inspection of the dead body of an infant) between convulsions and accidental suffocation, or an overdose of soothing syrup, or other causes too numerous to mention ? All this leads to the conclusion that in every case where no medical man has been in attendance before death, a post-mortem examination should certainly be made, and the result stated in evidence, if anything like a satisfactory conclusion is to be arrived at.”

Alcoholism, though one of the terms used by the Registrar General in classifying death-causes, is not made use of in the forms supplied to Medical Officers of Health, so that any deaths certified as due to this, or to intemperance or delirium tremens, are entered under the heading—“ all other diseases.” There is no reference to alcoholism, as a cause of death, except in three or four of the Reports. In the Borough of Crewe, 2 deaths in respect of which inquests were held were found to be due to alcoholism ; in Dukinfield there were also 2 deaths from alcoholism ; and in Middlewich there was one death from the same cause. In Wallasey two deaths were registered as due to intemperance and 5 deaths as due to delirium tremens. Alcoholism is so largely concerned in causing disease and premature death directly or indirectly, that the number of times in which it is certified as *the* cause of death is of little significance.

Death from Lock-jaw.—On April 5th a death took place from lock-jaw at Over Alderley in the Macclesfield Rural District. The deceased was a man, 66 years of age, who got his hand fast in the cogwheels of a crane on March 25th, and in the course of a few days manifested the first symptoms of the disease to which he succumbed. The death was made the subject of a Coroner’s inquest where the facts were elicited. As it is not often that a death occurs in the County from lock-jaw or tetanus, the present occasion may be taken to point out that this disease is a specific infective fever due to the introduction into the system of a micro-organism in soil taken from the streets or cultivated land. The disease may ensue from any wound in any part of the body, but occurs more frequently in connection with wounds in a part exposed to earth or dirt. In the human subject the period of incubation (*i.e.* before there are even local spasms) is said to be from one day to twenty-two days ; and ordinarily, the shorter the incubation period the

more severe the disease. The tetanus bacilli remain localised entirely in the region of the wound, but the poison they generate is absorbed from the seat of inoculation and widely diffused. What then is the use of this knowledge as to the true nature of lock-jaw? It teaches that in respect of all wounds scrupulous cleanliness is of first importance. The wound should be washed till free of all foreign substances, and soaked and dressed with an antiseptic solution ; and the patient should be kept as quiet as practicable, and protected from external irritants.

Rabies.—The County has been remarkably free from this disease during 1896. An outbreak was reported at Norbury on April 26th, and another outbreak was reported at Over on June 12th, but on the brains, &c., of the animals suspected of having the disease being subjected to the requisite tests at the Brown Institution, London, no results were obtained indicating the presence therein of the virus of rabies. An outbreak of dumb rabies occurred in a dog at Rowton on July 9th.

Death from Dog-Bites.—A death from an unusual cause took place at the Seacombe Cottage Hospital (District of Wallasey) in August. A man, aged 49 years, who kept a young St. Bernard's dog, went into the back yard of his house, where the dog was kept, when the animal seized him by the leg and pulled him to the ground, keeping him there for several minutes. The dog was got off with difficulty, and the man taken into the house. Eventually the patient was removed to the Hospital. The dog was destroyed, but to the last gave no symptom that it was suffering from any malady.

The Infectious Disease (Notification) Act, 1889.—This Act came into force in London as soon as it became law. As regards the rest of the country, it is an "adoptive" Act, by vote of the Local Authorities, after public notice has been given. The obligation to notify each case of infectious disease rests on the householder and medical practitioner in attendance. Generally only the practitioner notifies, but the householder being also responsible prevents him from evading notification by not calling in a doctor. The infectious diseases to which the Act applies are small-pox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names :—typhus, typhoid, enteric, relapsing, continued, or puerperal. Also the Local Authority may, by resolution, order any other infectious disease, either temporarily or permanently, to be added to this list ; but such order has no validity until approved by the Local Government Board.

At the close of the year 1893, all but six of the Local Authorities in the County had adopted this Act. None

adopted it in 1894, but in January, 1895, the Marple District Council adopted the Act. During 1896, the Municipal Borough of Crewe and the Urban District of Yeardsley-cum-Whaley adopted the Act, and in both districts it came in force on October 1st. Thus at the close of 1896 there were but three Districts in which the provisions of the Act were not in force, viz :—

Congleton Municipal Borough,
Sandbach Urban District,
Nantwich Rural District.

It is pleasant to know that early in 1897 the Nantwich Rural District Council took the necessary steps for adopting the Act, so that at the time of writing this Report there are but two districts in the County in which infectious diseases are not compulsorily notifiable. At Congleton, the Medical Officer of Health has on three or four occasions urged his Authority to adopt the Act, and on the last occasion when the matter was discussed, it was decided not to adopt the Act, by a very narrow majority. The Sandbach Urban District have also received good advice on this topic.

Notification of Sickness by Friendly Societies.—In April, 1894, the Medical Officer of Health for Crewe instituted a system of notification of sickness by Friendly Societies. The system of notification has been since continued, and by its instrumentality not a few insanitary conditions have been rectified. The returns sent in from the Societies' Secretaries average 15 a week. The short experience he has had with this method convinces him that much valuable information would be obtained if the Secretaries of all the registered Friendly Societies were required to forward their sick returns to the local Medical Officer of Health. Even if a payment were made, say of three-pence for each return, the aggregate cost would not be great.

Isolation Hospitals.—The hospital accommodation in the Administrative County for isolation and treatment of infectious disease is as follows :—

Altringham Urban District—Lloyd's Fever Hospital.

Bucklow Rural District—A marquee.

Congleton Rural District and Sandbach and Alsager Urban Districts—A temporary hospital at Arclid.

Crewe Municipal Borough—A farm-house set apart for small-pox cases.

Hyde Municipal Borough—Hyde Hospital.

Macclesfield Municipal Borough—A small "Ducker" hospital.

Northwich Urban District—A marquee and an old building.

Northwich Rural District—A small temporary hospital close to the town of Northwich.

Runcorn Urban District—Runcorn Hospital.

Runcorn Rural District—A temporary hospital at Moore, lent by the Manchester Ship Canal Company.

Wallasey Urban District--Mill Lane Hospital.

Winsford Urban District—A very small temporary hospital.

Wirral Rural District and Higher Bebington, Lower Bebington, Bromborough, Neston and Parkgate, Hoylake and West Kirby Urban Districts, forming the Wirral Joint Hospital District—Greasby Hospital and Spital Hospital.

In all 106 beds are provided in permanent hospitals and 134 beds in temporary erections, making together a provision of 240 beds.

The other Isolation Hospitals in the Administrative County, which do not belong to District Councils Urban or Rural, are the Liverpool Port Hospital, the Bromborough Pool Works Hospital, the Macclesfield Guardians' Hospital, and the two Isolation Hospitals provided at the County Asylums at Upton and Parkside. The Port Hospital is for cholera and occasionally other cases occurring on ship-board. The Bromborough Pool Hospital belongs to Price's Patent Candle Company and is solely for the use of employés at the Works. The Macclesfield Guardians' Hospital is for cases of infectious disease arising in the Workhouse, and the Asylums' Hospitals are, of course, exclusively for cases occurring among the inmates of the Asylums. Thus not one of these hospitals is generally available.

The Fever Hospital in connection with the Chester Infirmary, is used by the Hoole Urban District and the Chester and Tarvin Rural Districts. Stockport Borough Hospital, which, like the Chester Infirmary is outside the Administrative County, is used to some extent by neighbouring districts. Monsall Hospital, near Manchester, appears to be used to a very slight extent (or may be used) by Sale Urban District and Macclesfield Rural District. Warrington Hospital, not very long since, could, by agreement, be used by two districts contiguous, but the agreements have been terminated. How singularly inadequate the existing hospital provision is to meet the requirements of an area, having a population of about 572,000, must be obvious. And the provision made is even more inadequate than it looks on paper, so that not infrequently infectious cases have to be treated in Workhouses, and many who cannot be properly housed and isolated at home are not removed, and remain as possible sources of infection to members of their families and neighbours. Adopting the Infectious Disease Notification Act is doubtless a wise and right thing to do; but if when a case of infectious disease is notified—it may be the initial case in an epidemic—there is no means of isolating the patient, the Local Authority have not done all that was practicable for preventing the spread of infectious disease.

Of the 4,762 cases of infectious disease notified in 1896, only 561 (11.7 per cent.) were isolated in hospital.

In many of the Reports are references to the need of Isolation Hospital accommodation, and in a few are statements as to what has been done, or is under consideration. At Congleton the four cottages which the Corporation for some years kept in readiness for small-pox cases are no longer so kept; but no other accommodation has been provided. At Crewe, the house reserved for small-pox cases, has been kept in readiness, and was once used during 1896. Progress has been made with the new Isolation Hospital, now in course of erection at Crewe, which is to provide 28 beds to be available for cases of infectious disease other than small-pox. The Hyde Hospital is doing good work, but requires to be enlarged. The Medical Officer of Health writes:—"There should be a pair of wards for one other disease at least, and also a ward for the reception of persons suffering from doubtful illness." A laundry and discharging room are also much required at this Hospital. The little temporary hospital provided by the Borough of Macclesfield, had to be closed from March 5th, to April 6th, for urgent repairs, and from May 9th to 29th it was again closed for repairs. The Medical Officer of Health is "still of opinion that the provision of a permanent building is a standing necessity." The Medical Officer of Health for Alsager, states that it has been proposed to use the small-pox hospital at Arclid for cases of other infectious diseases, and points out its unsuitableness. The Medical Officer of Health for Bollington writes:—"It is almost impossible in the absence of an isolation hospital, to prevent the spread of scarlatina, especially when it occurs among working people living in a very small house having but one bedroom, or even two." *The Medical Officer of Health for Dukinfield, reports that the matter of hospital provision has received the serious consideration of the Sanitary Committee. There is no provision at present, except an arrangement with the Borough of Hyde to have the use of two beds in the Hyde Hospital for cases of small-pox, should they arise. At Hoole, where the Chester Fever Hospital is used, the Medical Officer of Health was unable to isolate as many cases of diphtheria as he wished,

*In an address by Mr. A. J. King, B.Sc., F.C.S., Chairman of the Bollington Urban District Council, delivered on April 29th, 1897, is the following passage, with reference to Isolation Hospital provision.

"You are all aware that the present year is being celebrated throughout the British Empire as the 60th anniversary of the accession of her most Gracious Majesty Queen Victoria. This celebration is taking various forms in different places, but I believe the form which most commends itself to her Majesty is one which is allied with some permanent scheme for the alleviation of the sufferings of the sick and the poor. For Bollington I can conceive of no better scheme than to make a determined effort to raise a fund to give a good start to an Isolation Cottage Hospital."

owing to insufficient accommodation. The Medical Officer of Health for Marple reports that on two occasions, in 1896, he got cases of scarlatina isolated at the Hyde Hospital and checked the spread of the disease. On another occasion the initial case was not removed to hospital, and it was followed by 6 others. The Medical Officer of Health for Sale points out the inconvenience of sending patients and their infected bedding to the Monsall Hospital (8 miles off), and says a hospital and disinfector should be provided nearer home. At the Wallasey Isolation Hospital, the addition to the administrative block being made at the end of 1895 was completed in 1896, and the permanent nursing staff has since been increased. During the year also a "BERTHON TENT," made of wood with canvas roof, was erected in the hospital grounds. It is designed to receive 4 patients, and it is thought may prove useful in the event of isolated cases of small-pox or typhus fever arising. The small wooden erection provided at Winsford has been repaired during the year. The Report from Bucklow Rural District states that applications were made to the Council to remove cases to hospital, but they could do nothing. As regards one diphtheria case an attempt was made to get it received into the Altrincham Urban District Hospital, but without success. This Urban District Council have since been requested to allow cases of emergency to be sent to their hospital. The Medical Officer of Health for the Congleton Rural District states that the wooden erection at Arclid was kept in readiness. In two or three instances parents were strongly recommended to have their children suffering from scarlatina removed, but declined. In Nantwich Rural District the question of making provision was the subject of inquiry by a Committee of the Council in the latter months of the year. This Committee reported in favour of providing a Hospital to accommodate 12 patients; but their report has so far not been acted upon by the Council.

Some of the Isolation Hospitals in the County have done excellent work during the year, and there is abundant evidence, as there has been in past years, that when a well-built permanent building is provided and properly equipped, there is no unwillingness on the part of the public to make use of it. For instance, at Hyde Hospital were treated 133 cases, at Wallasey Hospital 145 cases, and at Spital Hospital 101 cases. The proportion of deaths among patients treated in hospital was remarkably small.

The Isolation Hospitals Act, 1893.—This Act, which was passed on December 21st, gives most important powers to County Councils, and will enable them to take an active part in obtaining the provision of efficient hospitals for isolating and treating cases of infectious disease. The Public Health Act, 1875, gave powers to Local Authorities, separately and jointly, to provide hospitals for infectious cases; but as many Authorities

neglected to use the powers conferred or used them inadequately, and there was no ready way of moving these Authorities to make sufficient hospital provision, it seemed that further legislation was needed, and this is supplied by the Isolation Hospitals Act. The Clerk of the County Council, in January, 1894, issued a summary of the principal provisions of the Act—the Council will, therefore, be generally familiar with these. Without going into particulars, it may be well here to call attention to the contents of the Sections 2, 3, 4, 5 and 6 of the Act. Section 2 refers to limits. The Act does not extend to Scotland, Ireland or London, or to any County Borough, or except with consent to any Borough, only in case of a Borough of under 10,000 population the Local Government Board may direct that the Act shall apply. Section 3 empowers the Council of every County to provide, or cause to be provided, hospitals for the reception of infectious cases, on application being made to them and proof adduced as mentioned in the Act, to the effect that necessity for such hospitals exists. Section 4 states that the application may be made by one or more Local Authorities as defined by the Act, or by not less than 25 ratepayers in any contributory place. Section 5 directs that the application must be made by petition, and must state the district for which the hospital is required and the reasons for its establishment. The County Council are to consider the petition, and if satisfied that a *prima facie* case is made out, cause an inquiry to be made as to the necessity of the establishment of a hospital. By Section 6 a County Council may direct their Medical Officer of Health to make an inquiry as to the necessity of an Isolation Hospital being established for the use of any particular district, and if he reports that such a hospital ought to be established, the Council may take the same proceedings for its establishment as if a petition had been presented by a Local Authority.

It will be remembered that :—

- (1) In January, 1894, the consideration of this important Act was postponed until it could be ascertained to what extent the Local Government Bill, then before Parliament, would if passed into law interfere with the existing areas of the Sanitary Authorities of the County.
- (2) In October, 1894, the further consideration of the Act was postponed until after the establishment of the new Urban and Rural District Councils ; and it was directed that in the meantime a letter be written to each Urban and Rural Sanitary Authority in the County stating that in the opinion of the Council no delay should take place in putting the Act into operation, and

asking them to consider the question and be prepared to consult with the Council early in 1895, as to the Hospitals it was necessary to erect.

(3) Also in October, 1894, the County Medical Officer of Health was instructed to report to the Public Health Committee as to the existing Isolation Hospitals in the Administrative County and what further provision should, in his opinion, be made for establishing additional Isolation Hospitals.

The Report of the County Medical Officer of Health on the existing Isolation Hospitals in the Administrative County, &c., was presented to the Public Health Committee on January, 25th, 1895; when it was resolved (1) that the said Report be referred to a Sub-Committee, consisting of Messrs. E. J. Sidebotham, J. W. Smith, W. Hodgson, J. Atkinson, D. Graham, R. O. Orton and J. T. Thompson, for their consideration and report after conferring thereon with the County Medical Officer of Health; and (2) that the Clerk forward a copy of the Report of the County Medical Officer of Health to each of the Urban and Rural District Councils in the Administrative County, with a request that they will furnish the Sub-Committee with their observations thereon for the information of the Public Health Committee, and that the Clerk also forward a copy of such Report to the Medical Officer of each Urban and Rural District Council in the County.

It was some time before all the Urban and Rural District Councils had considered the Report of the County Medical Officer of Health, and furnished to the Sub-Committee their observations thereon. However, at the meeting of the Isolation Hospitals Act Sub-Committee, on September 26th, 1895, the Report of the County Medical Officer of Health on the existing Isolation Hospitals, &c., was considered, and in connection therewith the Clerk submitted the observations of the Urban and Rural District Councils thereon, together with a plan prepared by the County Surveyor, showing the districts suggested by the County Medical Officer of Health in his Report. The Clerk also read a copy of a communication addressed by the town Clerk of the City of Chester to the Tarporley Urban District Council and the Chester and Tarvin Rural District Councils, and certain Councils in the County of Flint, inviting such Councils to appoint representatives to a conference to discuss the advisability of establishing a Joint Isolation Hospital at Chester.

After some discussion, it was resolved "That the plan, together with the detailed observations of the several Urban and Rural District Councils and the communication

from the Town Clerk of the City of Chester, be handed to the County Medical Officer of Health, and that having regard to the before-mentioned observations of the Urban and Rural District Councils, he be requested to prepare and submit to a future meeting of this Sub-Committee a tentative scheme as to the manner he suggests the Act should be put into operation, with a view to the Sub-Committee deciding the following points, viz.:—(a) What Isolation Hospital Districts in the County they should recommend the Council to create and the boundaries thereof, and (b) to what extent, if any, they should recommend the Council to grant financial aid towards establishing Isolation Hospitals in such Districts, or the maintenance thereof when erected." The Sub-Committee also resolved, "That the Clerk obtain information from other Counties as to what action, if any, is being taken by them for putting the Isolation Hospitals Act, 1893, into operation." Copies of these two Resolutions were furnished to the County Medical Officer of Health, together with the plan, the detailed observations of the several Urban and Rural District Councils, a copy of the communication referred to from the Town Clerk of the City of Chester, and also a return of the information from other Counties as to what action, if any, is being taken by them for putting the Isolation Hospitals Act into operation.

The County Medical Officer of Health also received a copy of an Official Memorandum signed by the Medical Officer of the Local Government Board, "On the provision of Isolation Hospital Accommodation by Local Authorities." This Memorandum was not issued when the County Medical Officer of Health prepared his Report on the existing Isolation Hospitals in the Administrative County, &c.

Having carefully considered these various papers the County Medical Officer of Health prepared a Supplementary Report on the Isolation Hospitals in the Administrative County and what Further Provision should be made for additional Isolation Hospitals. This Report was dated December 28th, 1895, and was presented to the Isolation Hospitals Act Sub-Committee on January 30th, 1896. The Report of the Isolation Hospital Act Sub-Committee of this date was laid before a Meeting of the Public Health Committee on May 1st., when it was:—

RESOLVED—That such Report be not printed as part of the proceedings of this Committee, and that the consideration thereof be adjourned until the Sub-Committee are in a position to report upon the probable cost of carrying out the scheme for establishing the Isolation Hospitals suggested by the County Medical Officer of Health in his Supplementary Report, and also until the Sub-Committee have received the views

of the Authorities of those districts, the County Medical Officer of Health in such supplementary Report suggests should be combined into Hospital Districts.

The report of the Isolation Hospitals Act Sub-Committee, dated January 30th, was accordingly again laid before a Meeting of the Public Health Committee. On the same date (October 23rd) Reports of Meetings of the Isolation Hospitals Act Sub-Committee on July 27th, and on October 1st, were laid before the Public Health Committee, when all three Reports were adopted by the Committee. The Resolutions passed by the Isolation Hospitals Act Sub-Committee on January 30th were as follows:—

RESOLVED—That the Hospital Districts, suggested by the County Medical Officer of Health, both in his Original and Supplementary Report, be generally approved, subject to such minor alterations therein as may be found necessary hereafter.

RESOLVED—That the Clerk forward a copy of such portion of the Supplementary Report of the County Medical Officer of Health as relates to the combination of Sanitary Areas in Hospital Districts, to each Sanitary Authority within each proposed District, with a request that such Authorities will confer together with the object of accepting the combinations proposed therein, and also intimate to such Authorities that if they cannot agree to such proposed combination, this Sub-Committee will be prepared to confer thereon, with such Representatives as they may appoint for such purpose.

RESOLVED—That as it will be, in the opinion of this Sub-Committee, for the benefit of the County, that adequate Isolation Hospital accommodation should be provided, the Council be recommended, as a matter of expediency, to contribute out of the County Rate, under Section 21 of the Isolation Hospitals Act, 1893, a capital sum towards the structural expenses of new Isolation Hospitals to be erected, equal to one-third of the cost thereof, and that in the cases where Isolation Hospitals have been provided sufficient for the Districts in which they are situate, that the Council be recommended to contribute an annual sum towards the establishment expenses of such Hospitals, equal to one-third of the interest calculated at 4 per cent. on the capital cost of the erection of such Hospitals.

RESOLVED—That the Council be recommended to prescribe, as conditions upon which the foregoing contributions will be made, that the County Council

shall be entitled to elect a proportionate number of representatives upon the Committee of Management of such Hospitals, and in the case of new Hospitals, that the place where such Hospital is to be erected, and the plans thereof, shall be approved by the County Council.

RESOLVED—That the County Medical Officer of Health carefully consider what, in his opinion, will be the total capital cost of erecting the proposed new Isolation Hospitals for the Districts suggested by him, and also what, in his opinion, will be the amount of the annual contribution towards the establishment expenses of the existing Isolation Hospitals on the principle mentioned in the last but one Resolution, and submit a Report thereon for the information of the Sub-Committee at its next Meeting.

At the Meeting of the Isolation Hospitals Act Sub Committee on July 27th, which was held at Knutsford, the Clerk reported that in accordance with the Resolution passed at the last meeting of the Sub-Committee, he had transmitted a copy of such portion of the Supplementary Report of the County Medical Officer of Health as relates to the combination of sanitary areas in Hospital Districts, to each Sanitary Authority within each proposed district, with a request that such Authorities would confer together with the object of accepting the combinations proposed therein, and an intimation was also sent to such Authorities that if they could not agree to such proposed combination, the Sub-Committee would be prepared to confer thereon with such representatives as they might appoint for such purpose, and laid before the Committee the replies received thereto.

I. SUGGESTED COMBINATION OF THE CHESTER, TARVIN, AND MALPAS RURAL DISTRICTS, AND HOOLE AND TARPORLEY URBAN DISTRICTS.

The Chester and Tarvin Rural District Councils replied that they consider the arrangements made with the Chester Infirmary sufficient for the present. The Malpas Rural District Council sent no reply. The Hoole District Council considered it advisable to wait until the City of Chester had provided an Isolation Hospital, and make arrangements with them. The Tarporley District Council replied that they would if practicable make arrangements with the Chester City Council for having patients accommodated at the new Hospital.

RESOLVED—That the further consideration of the recommendations to be made upon the above be postponed until the next Meeting, and in the meantime the Clerk ascertain from the Chester Town Council

whether they purpose erecting an Isolation Hospital, and if so, its situation, and proposed capacity, and also whether they are prepared to enter into arrangements with the foregoing Councils (except Malpas) for the reception therein of persons suffering from Infectious Diseases from such Districts.

RESOLVED—That the Clerk press for a reply from the Malpas Rural District Council prior to the next Meeting of the Committee.

2. RUNCORN RURAL DISTRICT.—This Council replied that they had no observations to submit upon the Supplementary Report of the County Medical Officer of Health.

RESOLVED—That the Clerk request the above Council to inform the Sub-Committee, prior to its next meeting in October, whether they intend to provide an Isolation Hospital for their District, as suggested by the County Medical Officer of Health, and if so, when ?

3. COMBINATION OF BUCKLOW, RURAL DISTRICT AND KNUTSFORD, ASHTON-UPON-MERSEY, LYMM AND WILMSLOW URBAN DISTRICTS.

In connection with this proposed combination a Conference had been held between the several Authorities, but no agreement had been arrived at. Deputations, therefore, from each of the Authorities, with the addition also of Representatives from the Alderley Edge and Sale Urban District Councils, waited upon the Sub-Committee on the subject. The Chairman of the Bucklow Rural District Council stated that his Council were practically agreed that Isolation Hospital accommodation should be provided, and that they were also in favour of the principle of combination, but that they considered that having regard to the area of the proposed combined District, and to the distribution of the population, there should be two Hospitals provided for such District, one situate in the northern and one in the southern part, instead of one large Hospital situate in the centre thereof, and this view was acquiesced in by the Representatives of the Knutsford, Ashton-upon-Mersey, Lymm and Wilmslow Urban District Councils. The Representative of the Sale Urban District Council attended and stated that his District was not included in the foregoing proposed Hospital District by the County Medical Officer of Health for the reason that they had made arrangements for the reception of their Infectious cases into the Hospital at Monsall belonging to the Manchester Corporation. Those arrangements would however come to an end next year, and he asked on behalf of his Council to join the foregoing proposed District, and expressed himself as being in favour of the erection of two

Hospitals as suggested by the Representatives of the Councils whose Districts the County Medical Officer of Health suggested in his Supplementary Report should be combined into a Hospital District. A Representative attended from the Alderley Edge Urban District Council and stated that although the County Medical Officer of Health had grouped in his Supplementary Report the District of his Council with the Macclesfield Rural District they preferred to form part of the proposed Bucklow combination if the Sub-Committee would assent thereto.

After hearing the foregoing observations of the several Representatives of the Councils represented, the Chairman of the Sub-Committee enquired whether the Sub-Committee were to understand that if further time was given there was any reasonable probability of voluntary arrangements being arrived at, either for the establishment of one Hospital or two Hospitals, as if not, the Sub-Committee would probably consider it to be its duty to recommend the County Council to put into operation the Isolation Hospitals Act, 1893, to which a reply was made that if time were given for further conference, there was a probability of arrangements being made for the erection of either one or two Hospitals by voluntary agreement, without the intervention of the County Council. The Sub-Committee, after consideration, then informed the Deputation they would postpone the further consideration of the recommendations they would make to the County Council on this proposed combination until the 1st of October next, to permit of the Councils whose Districts the County Medical Officer of Health proposed should be combined, including therein the Sale Urban District, and if it could be arranged, the Alderley Edge Urban District also, agreeing to enter into arrangements for supplying Isolation Hospital accommodation for such combined District, and the Chairman also stated that the Sub-Committee could have no objection to two Hospitals for such District instead of one, provided that each of them had adequate accommodation to the satisfaction of the County Medical Officer of Health for the portion of the District they were each intended to serve.

4. COMBINATION OF NORTHWICH RURAL DISTRICT AND NORTHWICH, MIDDLEWICH AND WINSFORD URBAN DISTRICTS.

These Authorities held a Conference on July 20th upon the proposals of the County Medical Officer of Health, when the following Resolutions were passed:—"That this Meeting is of opinion that the proposals of the County Council under the Isolation Hospitals Act are extravagant and unreasonable, and on these grounds we pledge ourselves to resist the same." This Resolution was carried

with one dissentient. "That this Meeting is opposed to the principle of combination." This Resolution was carried —31 voting for and 7 against it.

The Northwich Rural District Council had also intimated that they concurred in the Resolutions passed at the Conference. They considered that the Hospital at Marbury was adequate for the wants of their District. The Council would be prepared to give favourable consideration to any reasonable suggestion for the extention of the Hospital, if the Committee of the County Council deem this necessary. A Deputation from the Northwich Urban District Council attended the Sub-Committee and stated they did not object on principle to the proposal of the County Medical Officer of Health, but wished to know whether the Sub-Committee objected to the site of their proposed Hospital, and to their proposals for altering the buildings situate thereon. In reply the Chairman intimated to the Deputation that the Sub-Committee could not recommend the Council to approve the proposed site, neither could, in the opinion of the Sub-Committee, the buildings now standing thereon be adapted as a convenient Hospital.

The Middlewich Urban District Council had passed the following Resolution:—"That this Council whilst willing to carry out the duty imposed upon them by the Isolation Hospitals Act, 1893, of providing hospital accommodation for this District is strongly of opinion that a much more moderate scheme than that proposed by the County Medical Officer of Health would meet all the requirements of such a District. The Council desire to record the fact that not a single death from small-pox has occurred in this Council's area for at least the last seventeen years."

The Winsford Urban District Council intimated that they had decided to re-arrange their Hospital and also enlarge it. In a subsequent letter they state that they are now making inquiries with a view to purchasing or taking on lease premises which, when they have got a definite offer, will be submitted to the County Medical Officer for consideration with a view to making additional provision to meet the requirements of the Act.

RESOLVED—That the Clerk intimate to the Councils of the foregoing Districts that this Sub-Committee regret to find that the proposals of the County Medical Officer of Health with regard to the provision of Isolation Hospital accommodation is not acceptable to the local Authorities, and further that unless each of such Councils satisfy the County Medical Officer of Health prior to the next Meeting of the Sub-Committee in October that they have provided or intend to provide adequate Isolation Hospital accommodation for their respective Districts, either separately or in

combination, the Sub-Committee will consider the advisability of recommending the County Council to take the steps necessary to constitute a Hospital District as suggested by the County Medical Officer of Health.

5. COMBINATION OF NANTWICH RURAL AND NANTWICH URBAN DISTRICTS.

The Nantwich Rural District Council replied that they had appointed an influential Committee to take the matter into consideration, and report to the Council at their next Meeting. The Nantwich Urban District replied that the matter is still under the consideration of the Committee entrusted with it.

RESOLVED—That the Clerk press the above-named Councils for a definite reply prior to the next Meeting of the Committee in October.

6. COMBINATION OF TINTWISTLE RURAL DISTRICT AND STALYBRIDGE BOROUGH, AND DUKINFIELD, HOLLINGWORTH AND MOTTRAM URBAN DISTRICTS.

Tintwistle Rural District Council replied that the population they represent is so purely rural, and they have hitherto enjoyed such immunity from zymotic disease that they cannot make up their mind to provide separate hospital accommodation or combine with other Councils in making provision. The reply from the Borough of Stalybridge intimated that a Sub-Committee had been appointed to confer with Councils whose Districts it was proposed should be combined. In a later communication it was stated that the Sub-Committee were waiting to consider proposals made by other Authorities. The Dukinfield Urban District Council passed the following Resolution:—“That the Council protest most strongly against the scheme of the Medical Officer of the County including this Urban District in a Hospital District, along with the Districts of Stalybridge, Tintwistle, Mottram and Hollingworth, and in addition desire to state that they see no necessity whatever for Dukinfield being included in any Hospital District.” The Hollingworth Urban District Council replied that they had appointed a Sub-Committee to confer with Representatives of Hollingworth and Mottram.

RESOLVED—That the Clerk ascertain from the Town Council of the Borough of Stalybridge whether they consent to the County Council dealing with the Borough under the Isolation Hospitals Act, 1893.

RESOLVED—That the Clerk intimate to the Council of the Tintwistle Rural District, and also to the Councils of the Dukinfield, Hollingworth and Mottram Urban

Districts, that unless each of such Councils satisfy the County Medical Officer of Health prior to the next meeting of the Committee in October, that they have provided, or arranged to provide, adequate Isolation Hospital accommodation for their respective districts, either separately or in combination with other districts, the Sub-Committee will consider the advisability of recommending the County Council to take the steps necessary to constitute a Hospital District, as suggested by the County Medical Officer of Health, excluding the Borough of Stalybridge, unless the Council thereof consents thereto.

7. COMBINATION OF STOCKPORT RURAL DISTRICT AND BREDBURY AND ROMILEY AND MARPLE URBAN DISTRICTS.

The Stockport Rural District Council replied that they did not at present propose to take any steps with regard to the recommendations in the Supplementary Report of the County Medical Officer. The Bredbury and Romiley Urban District replied that the Stockport Rural District Council had been approached with the object of getting them to join in a scheme for the erection of a Hospital for the three districts, but they declined to entertain the question. A conference had been held with the Marple District Council, but they were not disposed to agree to the erection of a Hospital for more than six beds. The Bredbury and Romiley Council considered this totally inadequate, and thereupon passed a resolution to the effect that they were satisfied with the present arrangement for the use of the Hyde Hospital. The Marple Urban District Council replied that they were quite willing to join in forming a Hospital District as suggested, but the other Authorities did not consider it of any advantage to co-operate.

RESOLVED.—That the Clerk intimate to the Councils of the foregoing Districts that unless each of them satisfy the County Medical Officer of Health prior to the next Meeting of the Sub-Committee in October, that they have provided or arranged to provide adequate Isolation Hospital accommodation for their respective Districts either separately or in combination with other Districts the Sub-Committee will consider the advisability of recommending the County Council to take the steps necessary to constitute a Hospital District as suggested by the County Medical Officer of Health.

8. COMBINATION OF MACCLESFIELD AND DISLEY RURAL DISTRICTS AND MACCLESFIELD BOROUGH, AND ALDERLEY EDGE, BOLLINGTON AND YEARDSLEY-CUM-WHALEY URBAN DISTRICTS.

The Macclesfield Rural District Council replied that they are convinced of the absolute and urgent necessity for the provision of Isolation Hospital accommodation, and to avoid further delay the next meeting of the Council would be called in pursuance of Section 4 (1) of the Act, for the object of making application to the County Council to erect, as soon as possible, an Isolation Hospital sufficient for the requirements of the Districts as suggested by the County Medical Officer of Health and to apportion the cost between the different Authorities. In reply to a letter from the Clerk to the County Council inquiring if a Conference had been held with the Districts proposed to be combined, the Clerk to the Rural District wrote that his Council was of opinion there would be a difficulty (as on previous occasions) in arranging terms of payment and considerable delay would arise, they therefore decided to request the County Council to take the matter up. A third letter transmitted the following Resolution, passed by the Rural District Council on July 9th:—"That an application be made to the Cheshire County Council under Section 4 (1) of the Isolation Hospitals Act, 1893, for the establishment, as speedily as possible, of an Isolation Hospital for this and the neighbouring Urban and Rural Districts, as recommended in the Supplementary Report of the County Medical Officer of Health, dated December 28th, 1895." The reply from the Borough of Macclesfield stated that the Report of the County Medical Officer of Health had been sent to Members of the Town Council, but that there was nothing further to report at present. The Alderley Edge Urban District Council replied that they preferred to form part of the proposed Bucklow combination. The reply from the Bollington Urban District Council was that nothing had been done at present. The Yeardsley-cum-Whaley Urban District had replied that they had no observations to make upon the Supplementary Report.

RESOLVED—That the Clerk ascertain from the Town Council of the Borough of Macclesfield whether they consent to the Council dealing with the Borough under the Isolation Hospitals Act, 1893.

RESOLVED—That the Clerk invite the Rural District Councils of Macclesfield and Disley, the Macclesfield Town Council, and the Urban District Councils of Bollington and Yeardsley-cum-Whaley to appoint representatives to confer with the Sub-Committee at its next Meeting in October.

9. COMBINATION OF CONGLETON RURAL DISTRICT, CONGLETON BOROUGH, AND THE ALSAGER, BUGLAWTON AND SANDBACH URBAN DISTRICTS.

In connection with this proposed combination a Conference had been held between Representatives from all the Councils of the Districts proposed to be combined, excepting Alsager ; and the following is an extract from a letter from the Town Clerk of Congleton, setting out the conclusions arrived at by such Conference, which have been approved by the Clerk of the Congleton Rural District Council, viz :—

1. That, although some accommodation for small-pox may be desirable, the erection of an expensive permanent hospital is not required.
2. That, as to other Infectious Diseases, if sufficient and efficient hospital accommodation is to be provided, a very large expense would have to be incurred, that if such accommodation were provided it is extremely doubtful whether it would be used, that the practical effect of such hospitals in staying the spread of the commoner Infectious Diseases has yet to be proved, and that it is not worth while to erect a permanent hospital to accommodate the rarer forms of disease (such as cholera, erysipelas, typhus, typhoid, and puerperal fevers) which can be dealt with by special provision as necessity arises or can be treated quite satisfactorily in the patients' houses.
3. That a much more economical and practical method of dealing with the matter would be by the County Council providing several portable temporary hospitals, to be kept in suitable centres in the Administrative County, and which could be quickly erected in any district where necessity arose. Suitable sites in each district might be bought or rented, drained and prepared at small cost, and arrangements might be made for the services of a skilled workman to superintend the erection of the hospitals being available at call. The cost of the site, of erecting the hospital, and of the hiring of it from the County Council at so much per day should be borne by the Local Authority. This would be infinitely cheaper than the very expensive scheme of Dr. Vacher, and, so far as can be seen, would be no less efficient.

RESOLVED—That the Clerk ascertain from the Town Council of the Borough of Congleton whether they consent to the County Council dealing with the Borough under the Isolation Hospitals Act, 1893.

RESOLVED—That the Clerk intimate to the Councils of the Congleton Rural District and also to the Councils

of the Alsager, Buglawton and Sandbach Urban Districts that unless each of such Councils satisfy the County Medical Officer of Health prior to the next Meeting of the Sub-Committee in October next that they have provided, or arranged to provide adequate Isolation Hospital accommodation for their respective Districts, either separately or in combination with other Districts, the Sub-Committee will consider the advisability of recommending the County Council to take the steps necessary to constitute a Hospital District as suggested by the County Medical Officer of Health, excluding the Borough of Congleton unless the Council thereof consents thereto.

The County Medical Officer of Health laid before the Sub-Committee a Memorandum of the estimated cost of erecting Isolation Hospitals, and this Memorandum was ordered to be printed and taken into consideration at the next meeting.

At the meeting of the Isolation Hospitals Act Sub-Committee, on October 1st, the Memorandum as to the estimated cost of erecting Isolation Hospitals was reported to the Committee. At the same meeting the Clerk reported that in accordance with the Resolutions passed at the last meeting of the Sub-Committee, he had communicated with the several Authorities again, and laid before the Sub-Committee the replies received thereto.

I. SUGGESTED COMBINATION OF THE CHESTER, TARVIN, AND MALPAS RURAL DISTRICTS, AND HOOLE AND TARPORLEY URBAN DISTRICTS.

The Town Clerk of the City of Chester replied that the Corporation proposed erecting an Infectious Diseases Hospital on their land at Sealand. Preliminary plans had been discussed with the Local Government Board, but were not yet definitely settled. There would be such administrative and commissariat provision as would suffice for reasonable additions. It was contemplated to provide for about 54 patients, and as this was probably more than the City would require, at all events under ordinary conditions, they may be able to afford accommodation to some of their neighbours, and it would be quite practicable at the outset, or in the future, to erect additional blocks to provide further accommodation. The Chester and Tarvin Rural District Councils and the Tarporley and Hoole Urban District Councils intimated that they favoured arrangements being made with the Chester Town Council for the reception of infectious cases into their Hospital. The Malpas Rural District Council had passed the following resolution:—"That in the absence of compulsory power to compel infected persons to avail themselves of an Isolation Hospital, this Council

objects to be involved in so large and expensive a scheme as that proposed by the County Medical Officer of Health;" notwithstanding their District Medical Officer of Health had recommended them to provide such accommodation in a manner which, with slight modification, would have the approval of the County Medical Officer of Health.

RESOLVED—That the Clerk enquire from the Malpas Rural District Council their reasons for not carrying out the recommendations of their own Medical Officer of Health as embodied in the foregoing Report, which, with certain slight modifications, is acceptable to the County Medical Officer of Health.

RESOLVED—That the Clerk invite all the before-mentioned Authorities to appoint Representatives to confer with this Sub-Committee at its next Meeting, and in the meantime the Clerk ascertain from the City of Chester Authorities whether they would be willing if terms can be arranged to acquiesce in the formation of a Joint Hospital District under Section 279 of the Public Health Act, 1875, for the City of Chester and the Districts of the before-mentioned Councils, and if so, that the City Authorities be invited to appoint Representatives to attend the before-mentioned Conference.

2. RUNCORN RURAL DISTRICT.

This Rural District had appointed a Committee to consider the question of providing Cottage Hospitals in different parts of the District, and to request the County Medical Officer to advise in the matter.

RESOLVED—That the further consideration be adjourned until the next Meeting, and the Clerk intimate to the Rural District that the Sub-Committee will at such Meeting expect to be in possession of information showing definitely what they purpose doing to provide adequate Isolation Hospital accommodation for their District.

3. COMBINATION OF BUCKLOW RURAL DISTRICT AND KNUTSFORD, ASHTON-ON-MERSEY, LYMM AND WILMSLOW URBAN DISTRICTS.

The Clerk reported that the Councils of the Urban Districts of Alderley Edge and Sale were agreeable to join the above proposed combined District, and that at a Conference between the Representatives of all the above Councils held at Knutsford on September 21st., it was unanimously decided to recommend the various Councils concerned to adopt the following Resolution at their next ordinary Meetings.

RESOLVED—That the Local Government Board be

requested to issue a Provisional Order forming the Rural District of Bucklow and the Urban Districts of Alderley Edge, Ashton-upon-Mersey, Knutsford, Lymm, Sale and Wilmslow, into a United District under Section 279 of the Public Health Act, 1875, for the purposes of the provision, maintenance and management, for the use of the inhabitants of such Districts of a hospital or hospitals for the reception of cases of infectious disease and providing that the representation of the said Councils on the Joint Board for such United District be as follows, viz:—

Bucklow Rural District Council	..	Ten Members.
Alderley Edge Urban District Council	..	One Member.
Ashton-upon-Mersey Urban District Council		Two Members.
Knutsford	do.	Two do.
Lymm	do.	Two do.
Sale	do.	Four do.
Wilmslow	do.	Three do.

and that the contributions of the said Councils respectively to the Common Fund of the United District be in proportion to the number of inhabitants in each Constituent District, such number to be ascertained from the report of the census made under the authority of Parliament last before the time of issuing the precepts for obtaining payment of such contributions; and that the cost of maintenance of patients be paid by the respective Councils from whose Districts the patients may be received into Hospital.

RESOLVED—That the Clerk express the approval of this Sub-Committee to the action which is being taken by the several before-mentioned Councils for the formation of a Joint Hospital District by Provisional Order of the Local Government Board under Section 279 of the Public Health Act, 1875, and also intimate to the Local Government Board that if the County Council contribute out of the County Rate towards the capital expenditure to be incurred in erecting a Hospital or Hospitals for such District, it will be conditional upon provision being made in the Provisional Order for such Council being entitled to elect a proportionate number of Representatives upon the Committee of Management of such Hospitals and upon the place where such Hospital or Hospitals is, or are, to be erected and the plans thereof being approved by the County Council.

4. COMBINATION OF NORTHWICH RURAL DISTRICT AND NORTHWICH, MIDDLEWICH AND WINSFORD URBAN DISTRICTS.

The Clerk of the Northwich Rural District Council replied that the feeling of the Council is still in favour of making provision for cases arising in their own District, and

asked the Sub-Committee to meet the Rural District Council at Northwich for the purpose of exchanging views on the subject and seeing if some solution of the question can be arrived at. The Northwich Urban District Council had adopted the following resolution passed by its Isolation Hospital Committee:—"The Committee unanimously recommend that the Council should agree to the proposals of the County Council as to the providing of an Isolation Hospital, and that the Clerk to the Council should be informed of this." The Middlewich Urban District Council had unanimously passed a resolution in favour of combination with the Authorities named in the County Medical Officer's Report. The Clerk of the Winsford Urban District Council replied that the Council have unanimously come to the conclusion that any additional hospital accommodation which may be required should be on the principle of a separate establishment, and not in conjunction with any other Authority, but that before finally deciding as to additional accommodation, the Council wish to know what contribution the County Council will make under Section 21 of the Act (a) as to structural requirements, and (b) as to annual maintenance.

RESOLVED—That the Clerk invite the above-mentioned Councils, or such Representatives as they may appoint, to confer with this Sub-Committee at a Meeting to be held at the Court House, Knutsford, upon a date to be hereafter arranged.

5. COMBINATION OF NANTWICH RURAL AND NANTWICH URBAN DISTRICTS.

The Nantwich Rural District Council replied that they have a scheme under consideration. The Nantwich Urban District Council replied that they are negotiating with the Crewe Corporation for the reception of cases of infectious disease into the Isolation Hospital now building at Crewe.

RESOLVED—That the further consideration be adjourned until the next Meeting, and the Clerk intimation to the Clerks of the District Councils that at such Meeting the Sub-Committee will expect to be in possession of the definite arrangement each Authority has made for providing adequate Isolation Hospital accommodation for their District.

6. COMBINATION OF TINTWISTLE RURAL DISTRICT AND STALYBRIDGE BOROUGH, AND DUKINFIELD, HOLLINGWORTH, AND MOTTRAM URBAN DISTRICTS.

The Tintwistle Rural District Council replied that they have an arrangement with the Chatterton Joint Hospital Board for the reception of small-pox cases. The

Town Clerk of Stalybridge intimated that his Council had appointed a special Sub-Committee to deal with the matter. The Clerk of the Dukinfield Urban District Council sent a copy of a circular issued by his Council as to a Conference of Urban and Rural District Councils to be held on this matter to protest against the scheme of the County Medical Officer of Health. The Clerks of the Hollingworth and Mottram District Councils sent a joint letter saying that these two Councils were of opinion that there was no necessity whatever for the establishment of an Isolation Hospital for these Urban Districts either alone or jointly with any neighbouring Authority, and further that such Councils are advised that the existing arrangements with the Hyde Corporation are sufficient for the requirements of the Districts.

RESOLVED.—That the consideration of the recommendation to be made upon the above Districts be postponed until the next Meeting, and that in the meantime the Clerk ascertain the nature of the arrangements existing between the Hollingworth and Mottram Urban District Councils and the Corporation of Hyde as to the reception into the latter's Hospital of Infectious cases from the Hollingworth and Mottram Districts, and also press the Corporation of Stalybridge for a definite answer as to whether they consent to the County Council dealing with the Borough under the Isolation Hospitals Act, 1893.

RESOLVED.—That the County Medical Officer of Health be authorized to attend the proposed Conference of Representatives of the Councils of the above Districts to be held at the Queen's Hotel, Manchester, on Tuesday, the 13th October.

7. COMBINATION OF STOCKPORT RURAL DISTRICT AND BREDBURY AND ROMILEY AND MARPLE URBAN DISTRICTS.

The Stockport Rural District Council intimated that they considered the establishment of an Isolation Hospital as recommended by the County Medical Officer of Health to be unnecessary. The Marple District Council had sent no reply. The Bredbury and Romiley Urban District Council replied that they considered the present arrangement for the use of the Hyde Hospital adequate for the District.

RESOLVED.—That the consideration of the recommendations to be made upon the above Districts be postponed until the next Meeting, and that the Clerk intimate to the Councils of such Districts that the Sub-Committee will be prepared to confer with them on the subject, and also at the same time inform such Authorities that the Sub-Committee are of opinion

that the present Isolation Hospital accommodation provided for such Districts is quite inadequate.

8. COMBINATION OF MACCLESFIELD AND DISLEY RURAL DISTRICTS AND MACCLESFIELD BOROUGH, BOLLINGTON, AND YEARDSLEY-CUM-WHALEY URBAN DISTRICTS.

The Town Clerk of Macclesfield Borough replied in answer to the inquiry whether the Corporation consented to the County Council dealing with the Borough under the Isolation Hospitals Act, 1893, that the Corporation were not prepared at present to consent to the County Council dealing with the Borough under the Act, but that at the same time they were favourable to joint Hospital accommodation being provided, conditionally, on satisfactory arrangements being made, and they were prepared to confer upon the question. The Sub-Committee then received in Conference Representatives from the Macclesfield Town Council, the Macclesfield and Disley Rural District Councils, and the Yeardsley-cum-Whaley Urban District Council, and discussed with them fully the best procedure to be followed in providing adequate Isolation Hospital accommodation for such District. At the conclusion the Sub-Committee stated that in their opinion such accommodation could be best provided by means of a Joint Hospital Board constituted by the Provisional Order of the Local Government Board, under Section 279 of the Public Health Act, 1875, which procedure was adopted by the Bucklow combined Authorities.

RESOLVED—That the consideration of the recommendations to be made upon the above Districts be postponed for three months to give time for the Councils of such Districts conferring together as to carrying out the opinions of the Sub-Committee as submitted to their representatives at the Conference.

9.—COMBINATION OF CONGLETON RURAL DISTRICT, CONGLETON BOROUGH, AND ALSAGER, BUGLAWTON AND SANDBACH URBAN DISTRICTS.

The Congleton Rural District Council had no further observations to make. The reply from Congleton Borough was that if the Sub-Committee insist upon carrying out the County Medical Officer's scheme for erecting permanent Hospitals both for small-pox and for other diseases, the Town Clerk does not think his Council will consent to be joined with the Authorities of the other Districts in the Congleton Union. The Sandbach Urban District Council had passed the following Resolution:—"That this Council most strongly protests against the action of the Sub-Committee of the Public Health Committee of the County Council in endeavouring to force upon the different Local

Authorities of Cheshire the expenditure of large sums of money in providing Isolation Hospitals for infectious diseases which in all probability would not be used to any extent, even if an outbreak of infectious disease took place, and in addition would be very expensive to maintain. This Council is of opinion that the necessity for the provision of these Hospitals may be obviated by the provision by the County Council of portable Hospitals which would be hired out to the different Authorities as required, and requests the County Councillor for this division to use his utmost endeavours with his co-Councillors to prevent any such Scheme being compulsorily put into operation." The Alsager Urban District Council had passed the following Resolution:—"That this Council does not consider any special provision in the nature of Isolation Hospital accommodation is required in this District for the present, as the number of cases of infectious disease which would be treated at such Hospital is practically nil, and that they, therefore, are strongly opposed to the proposed Scheme for providing a joint Hospital to include provision for the District of this Council, and fully endorse the views thereon set out in the letter of the Town Clerk of Congleton to the Clerk of the County Council on the 25th day of July, 1896." The Clerk of the Buglawton Urban District stated that in the opinion of his Council the Scheme suggested by the Medical Officer of Health for the County is both extravagant and unreasonable, and that it would be advisable for them to provide their own Hospital accommodation separately rather than in combination with other District Councils, and that enquiries were being made as to a house which, if it could be secured, could be suitably fitted up at no great expense, and would answer all the requirements of the District.

RESOLVED—That the Clerk invite the Congleton Rural District Council, the Congleton Town Council, and the Urban District Councils of Alsager, Buglawton, and Sandbach, to appoint Representatives to confer with the Sub-Committee at its next Meeting.

RESOLVED—That the proceedings of this and the two last Meetings of this Sub-Committee be reported to the Public Health Committee at its next Meeting.

The last Meeting of the Isolation Hospitals Act Sub-Committee in 1896, was held on October 23rd. At this Meeting the Clerk submitted the following correspondence which had taken place between the Local Government Board and himself, viz:—

2nd October, 1896.

SIR,

I have the honor to advert to the Board's communication of the 25th October, 1895, No. 122, 822, K2,

1895, and to ask for the opinion of the Board upon the following points, viz :—

- (1) Whether, assuming that Joint Hospital Districts are constituted by the Board under Section 279 of the Public Health Act, 1875, for the purpose of the provision, maintenance, and management of a hospital or hospitals for the reception of cases of Infectious Diseases, a County Council can under Section 21 of the Isolation Hospitals Act, 1893, where it is deemed expedient so to do for the benefit of the County, contribute a capital sum towards the structural and establishment expenses of such Hospital or Hospitals, or to either class of such expenses, and if so,
- (2) Whether, assuming such a contribution is given the County Council can as a condition of making such contribution stipulate that they (the Council) shall be entitled to elect a proportionate number of representatives upon the Committee of Management of such Hospital or Hospitals, and in the case of new Hospitals that the place where they are to be erected and the plans thereof shall be approved by the County Council.
- (3) Whether, in the event of the Board answering the foregoing questions in the affirmative, and the County Council decide to contribute towards the erection of Isolation Hospitals, there would be any objection on the part of the Board to embody the conditions mentioned in paragraph 2 in any Provisional Order that might be made by them constituting a Hospital District, provided that the proposed constituent Authorities are agreeable thereto.
- (4) Whether, the County Council have the power under Section 22 of the Isolation Hospitals Act, 1893, to borrow money for making contributions under Section 21 of such Act. and if so, for what number of years the Board are likely to sanction such a loan.

I shall be much obliged if I can be furnished with a reply to this communication as early as possible, as this Council is considering the advisability of making substantial contributions towards the erection of Isolation Hospitals, being of opinion that it is expedient so to do for the benefit of the County, and they, the Council, are desirous that such Hospitals should be erected and maintained under the provision of Provisional Orders made by the Board under Section 279 of the Public Health

Act, 1875, instead of such Hospitals being erected under the powers contained in the Isolation Hospitals Act, 1893.

I am, Sir,

Your obedient Servant,

REGINALD POTTS,

Clerk of the County Council.

*The Secretary,
Local Government Board.*

129509. K2, 1896.

LOCAL GOVERNMENT BOARD,

WHITEHALL, S.W.,

15th October, 1896.

SIR,

I am directed by the Local Government Board to advert to your letter of the 2nd instant, and, in reply to the inquiries therein, I am to state that the Board are advised that the Isolation Hospital to which a County Council may contribute under Section 21 of the Isolation Hospitals Act, 1893, is an Isolation Hospital which they provide or cause to be provided in pursuance of Section 3 of the Act, and that consequently a County Council are not empowered to contribute a capital sum towards the expenses of a Hospital or Hospitals provided by a Joint Hospital Board constituted under Section 279 of the Public Health Act, 1875.

As the second and third questions appear to depend upon the assumption that the County Council have power to make such a contribution, the answer to the first question renders it unnecessary for the Board to deal with the points raised in the second and third questions.

As to the fourth question the Board may state that, in their opinion, a contribution under Section 21 of the Isolation Hospitals Act, 1893, is not a purpose for which a County Council may borrow in pursuance of Section 22 of the Act.

I am, Sir,

Your obedient Servant,

ALFRED D. ADRIAN,

Assistant Secretary.

To REGINALD POTTS, Esq.,
*Clerk to the Cheshire
County Council.*

After the reading of this correspondence it was:—

RESOLVED—That in the event of the proceedings of this Sub-Committee being adopted, the Public Health Committee be recommended to appoint a Deputation to interview the Local Government Board upon the opinion expressed by them in the foregoing letter, with

a view to County Councils being empowered to contribute towards Isolation Hospitals provided by Joint Hospital Boards constituted under Section 279 of the Public Health Act, 1875, and to borrow for the purpose of such contributions.

On the same day the Report of this Meeting of the Isolation Hospitals Act Sub-Committee was adopted by the Public Health Committee, and a Deputation was appointed to interview the Officials of the Local Government Board on the opinion expressed by that Department in the foregoing letter. Accordingly on November 24th, the Deputation thus appointed had an interview with Mr. Adrian, one of the Board's Assistant Secretaries. The Report of this Deputation was in due course laid before the Isolation Hospitals Act Sub-Committee at a Meeting held in January, 1897, when this and other matters were dealt with.

The Infectious Diseases (Prevention) Act, 1890.—

This Act, except as regards London, where it has been in force since December, 1890, only comes into force after being formally adopted by the Local Authority. It gives increased control over the milk supply and increased powers of disinfection. It forbids the throwing of infectious rubbish into ashpits, &c. It forbids the retaining of an infectious human body longer than 48 hours, elsewhere than in a public mortuary or a room not used as a living, sleeping or work-room; and the removal of the body of any person dying of infectious disease in hospital, except for being buried forthwith. It empowers a Justice to order an infectious patient in a hospital for Infectious Diseases to be detained therein until free from infection, if it can be shown that he is without proper means of isolation and lodging elsewhere. It requires the Authority to provide free temporary shelter with the necessary attendance to the members of any families who have been compelled to leave their houses to enable them to be disinfected by the Authority.

This Act has been adopted by a few of the Local Authorities in the County, but there is no reference in any of the Reports to its being made use of except in the Report from the Borough of Crewe. In this District the Medical Officer of Health puts in force Section 5 of the Act in order to obtain the cleansing and whitewashing of rooms after they have been disinfected, and apparently also Section 6, if objection is made to the removal by the Authority of bedding, clothing, &c., for disinfection.

The Report from the Dukinfield Urban District states that this Act has been adopted, except Sections 9, 10 and 12, and that the powers thus obtained, will shortly be in force.

The Middlewich District Council have been several times advised to adopt this Act, but have not done so.

The Public Health Acts Amendment Act, 1890.—

This Act is also an “adoptive” one, but it does not apply to London. It gives power to regulate public sanitary conveniences, such conveniences used in common by occupants of two or more houses, or provided for factories or work-shops. It empowers the Urban Authorities to make bye-laws for keeping W.C.’s supplied with sufficient flushing water, as to structure of floors, hearths and staircases, and the height of dwelling-rooms, as to paving yards and open spaces about houses, and as to providing new houses with secondary means of access for removal of refuse, &c., as to times for removal through the streets of offensive matter, and as to vessels and carts employed being properly constructed and covered. It forbids rooms over privies, middens or ash-pits being used as living or sleeping rooms; and the erection of new buildings on foul sites. It permits all articles of unsound food, even those already sold, to be seized and condemned, or condemned before seizure. Finally under this Act the occupier of a registered slaughter-house convicted of having sold or had for sale unsound meat, may have his license revoked.

In the Report from Bredbury and Romiley it is stated that the District Council adopted this Act in 1896, and that it came in force on January 1st, 1897. The Marple District Council adopted the Act in 1895. During 1893, the Act was adopted by the Runcorn Rural Authority so far as it relates to rural districts; and in 1892 it was adopted by the Chester Rural Authority. It has also been adopted by the Borough of Crewe, and by the Winsford Urban Authority. However, neither this Act nor the Infectious Disease (Prevention) Act have been generally adopted, and where they have been adopted there is little evidence that the increased powers acquired have been used.

The Private Street Works Act, 1892.—This Act is also an “adoptive” one. It may be adopted in an Urban Sanitary District in England, and the Local Government Board may extend the Act to any Rural Sanitary District or part thereof. When the Act is adopted any street, or part of a street not sewered, levelled, paved, metalled, flagged, channelled, made good and lighted to the satisfaction of the Authority, may be sewered, levelled, paved, metalled, flagged, channelled, made good or provided with the proper means of lighting by the Authority, the expenses incurred in executing such private street works being apportioned on the premises fronting, adjoining, or abutting on such street or part of street, the sums apportioned being recoverable summarily or by action, or in the same manner as private improvement expenses are recoverable under the Public Health Act, 1875. Also the Authority may, if they think fit, contribute the whole or a portion of the expenses of any private street works, when all or many of the private street works mentioned have been executed in a street or part of a

street, the Authority may, by notice fixed on such street, &c., declare the whole of such street or part of street to be a highway repairable by the inhabitants at large. And if any street is now or shall hereafter be sewered, levelled, &c., to the satisfaction of the Authority, then, on application in writing of the greater part in value of the owners of the houses and land in such street, the Authority shall, within three months, by notice put up in such street, declare the same to be a highway repairable by the inhabitants at large.

The Dukinfield Urban District adopted this Act in October, 1896. It was also adopted in 1896 for the portion of Appleton (including Stockton Heath) in the Runcorn Rural District. The Northwith Urban District and some other Districts have adopted the Act, but make little or no use of it. In the Report from Hoylake and West Kirby, it is stated that twelve streets were made under this Act in 1896. The Wallasey Urban District seems to be in need of powers such as this Act confers, for the Medical Officer of Health remarks on the disgraceful condition of some of the roads, which he thinks should "be made passable and prevented from becoming a quagmire and positively dangerous." It is scarcely explicable why this Act is not more generally adopted.

Disinfection by Steam.—An efficient apparatus for disinfecting by steam the clothing, bedding, &c., of infectious patients is a necessary part of the equipment of a Sanitary Authority. Yet a large majority of the Authorities in the County have taken no steps to provide any apparatus for this purpose. At both Hyde and Wallasey there is an excellent apparatus conveniently near the Isolation Hospital. The Runcorn Rural Authority also have a good apparatus, but where placed (near the Small-pox Hospital at Moore) it is not very accessible. The excellent apparatus provided at Crewe in 1894 has since been much used. This is available for some districts contiguous but they rarely make use of it. A similar apparatus erected at Altrincham in the same year works satisfactorily.

In the Reports from eleven districts the need of an apparatus for efficient disinfection of bedding, &c., is mentioned. In the Borough of Macclesfield, where there is no apparatus for disinfecting by steam, it is stated that five infectious cases in 1896 appeared to derive their infection from clothes.

The bedding and clothing should be fetched and delivered by the Authority's officers, in light covered vans provided for the purpose. One van should always be used for collecting, the other for delivering, and to avoid all possible risk of the one being mistaken for the other it is convenient to have the collecting van painted red and the delivering van painted green.

The Medical Officer of Health for Hyde complains that his Authority have provided no van, and asks for one.

When the Authority has but one van it is usual to use this for collecting, and to require people to fetch their things after disinfection.

Disinfection of Premises.—In several Districts carbolic fluid and packets of carbolic powder are given to those who apply for disinfectants at the Inspector's Office. However, the disinfection of rooms which have been occupied by infectious persons appears ordinarily to be done or supervised by the Authority's officers; and what these officers mainly trust to is fumigation by means of burning sulphur. Now it is worth while asking—Does this “stoving” leave the room much as it was before? If the ceiling be lime-washed, if the floor and woodwork be properly washed with carbolic acid and soap and water, and if the walls be stripped and cleaned, the room will be efficiently disinfected. Whether the room has or has not been fumigated with burning sulphur makes very little difference. Indeed the fumigation may be mischievous, by giving a false sense of security, and leading to the neglect of really efficient disinfection.

Disinfection by burning sulphur having been tried in the balances and found wanting, it is pleasant to read in the Report from the Borough of Crewe, that the method of house-disinfection which the Medical Officer of Health instituted in 1895 has been employed during the whole of 1896, and has given satisfaction. This method, which has been practised in Paris for some years, consists in applying a solution (1 in 1000) of corrosive sublimate to the ceilings, walls, &c., by means of an equifex sprayer. The Medical Officer of Health for Crewe has in this way disinfected 281 houses. This is somewhat more costly than fumigating with sulphur, as in spraying two men are required to carry out the work. In the Report from the Borough of Hyde the recommendation is made that instead of burning sulphur in infected rooms they should be disinfected with a solution of corrosive sublimate. The Medical Officer of Health for Nantwich Rural District states that the arrangements for the disinfection of clothing, bedding, and premises cannot be considered satisfactory. The Medical Officer of Health for the Urban Districts of Knutsford, Middlewich, and Winsford, and the Rural Districts of Bucklow and Northwich has advised these Authorities that the efficacy of sulphur fumigation as a method of disinfection is far inferior to spraying with a solution of corrosive sublimate, and recommended the adoption of this improved way of disinfecting rooms. The Bucklow Rural District have taken his advice and a sprayer is now in use there, the efficient disinfection of rooms being thus provided for; but the other 4 Authorities have not yet sanctioned the purchase of the needful apparatus.

Systematic Inspection.—Probably it is the Inspector's first duty to give prompt attention to nuisances complained of by tenants or others, or discovered on infected premises. Scarcely of secondary importance, however, is the duty of systematic house-to-house inspection of the district so that the sanitary condition and surroundings of every house may be known, a record kept, and defects remedied. This duty is not neglected, indeed many Medical Officers of Health in their Reports recognise its necessity, still it does not appear to be carried out as thoroughly as it should be. Doubtless house-to-house inspection is made "when time permits," but if in any district it only occasionally happens that time permits, the reasonable conclusion is that an additional Inspector is required. In the Report from Bucklow the great need of another Inspector is noted. At Wallasey, where another Inspector has long been required, the staff was increased in 1896. By systematic inspection many defects are brought to light and remedied which would never be complained of.

Abatement of Nuisances.—The word "nuisance" as defined by the Public Health Act, 1875, includes so many things and conditions, that it may be said almost every form of pollution of air, ground or water constitutes a nuisance. Some of these are made the subject of complaint to the Medical Officer of Health or Inspector, some they discover for themselves. In either case each nuisance is entered in a book and an attempt made to obtain its abatement. The nuisances are due to various causes, among others insufficient drains and sewers, defective drains and sewers, obstructed drains and sewers, ditches carrying sewage, defective traps, waste-pipes untrapped or badly arranged, waste-pipes directly connected, broken water-fittings, no supply or an insufficient supply, soil-pipes un-ventilated or ill-ventilated, rain-pipes directly connected, defective rain-conductors or roofs, damp walls, dead rats and mice under floors, offensive accumulations of refuse, defective ashpits, privies or W.C.'s., yards lodging foul water, offensive ponds, dirty or overcrowded houses, animals or birds so kept as to be a nuisance, and excessive smoke from chimneys. Nuisances thus caused are abated without formal notice, or on formal notice, or after proceedings. The practice in different Districts varies greatly. In some the abatement of a large number of nuisances entered on the books is effected without formal notice, in others a formal notice is served in nearly every case. Further proceedings are rarely necessary in any of the Districts. According to the Reports, in only 14 cases were owners or agents summoned for non-abatement of nuisances during 1896.

The work of obtaining the abatement of nuisances certainly seems to have full attention from Medical Officers of Health, while it very properly occupies a large share of the time of Sanitary Inspectors. As regards 20 Districts, Reports are submitted by the Inspectors, giving particulars of the nature of the nuisances dealt with, and occasional notes of difficulties or failure. These Reports are all interesting. If they were drawn up on a uniform plan, and a Report were sent in by every Inspector in the County, the information supplied would be most useful.

Very little seems to be attempted and still less accomplished as regards the abatement of smoke nuisances. In some districts where many hundreds of other nuisances are reported there is but one smoke nuisance or none. However, it is not always the Inspector who is to blame, for in Stalybridge 69 smoke observations were taken, but the Sanitary Committee had recourse to no action in the matter. Creating a smoke nuisance seems to be regarded as quite a venial offence by some District Councils and Magistrates. Yet the presence of smoke implies the presence of noxious vapours (sulphurous acid mainly), and smoke-polluted air exercises a very distinct influence on the death-rate.

Examining Houses on Request.—It may be remembered that in November, 1893, public notice was given in the Borough of Crewe that anyone might have his house examined to ascertain its sanitary condition, free of charge, on making application to the Sanitary Department. The object was principally to enable new-comers to the town to ascertain the condition of any house they might contemplate occupying. Several householders availed themselves of this offer in 1896. In particular, two instances are cited by the Medical Officer of Health in which extraordinary defects in house-drainage were thus brought to light and remedied.

Ratable Value of Houses.—In the Crewe report is a note of the value of houses on the rate-book. It shows that in 1896, 77 per cent. of the houses in the Borough were rated under £10 per annum, and 94 per cent. under £20 per annum. If similar information were furnished by other districts it might throw some light on the incidence of disease and mortality, and aid in the solution of some health problems.

Ashpits, Middens,, &c.—The storing of refuse in receptacles in close proximity to inhabited houses is an insanitary practice. The system adopted in many towns, where each house is provided with a dust-box or dust-pail, to be emptied by dustmen early every morning, is a great improvement on the ashpit system. When, however, privies and ashpits are combined, and every kind of domestic refuse is deposited in the one receptacle, its proximity to a dwelling-house is even more objectionable.

Yet these “compound middens” (they go by various names) are very common throughout Cheshire, and in Rural Districts and some Urban Districts represent the sanitary conveniences ordinarily provided. The problem that Local Authorities and their responsible advisers have to solve is how to improve the compound middens, and reduce to a minimum the nuisance therefrom. There is little doubt the water-carriage system is the most satisfactory where practicable, and consequently the best way of altering the compound midden is to convert it into a w.c. and small dry ashpit. Many such conversions were effected in 1896,—in the Borough of Crewe there were 205, and in the Wallasey Urban District 122. In localities where the w.c. is not practicable, the old pit should be filled up to the ground level, the bottom being paved and the walls cemented over inside. The work of emptying will be made easier, and it will be more likely to be done regularly and systematically, if movable receptacles are provided. Modifying the compound middens in various ways is continually in progress as part of the work of nuisance abatement. In requiring a change the great point is to be sure that the change specified is the best under the circumstances, and this is far from easy.

In many Urban Districts of late, when compound middens have been converted, slop-closets in place of ordinary W.C.’s have been erected. The slop-closet is flushed with waste water by means of a tumbler, and in Districts where many are in use they appear to work satisfactorily. They seem well adapted to localities where the supply of water is deficient and where it would be difficult to procure water for the service-cisterns of ordinary W.C.’s.

With all that has been done there remain a large number of ill constructed ashpits and middens, and not a few leaky cesspools, which need the prompt attention of Local Authorities.

Refuse Removal.—Quite as important as the proper construction of ashpits, &c., is the systematic removal of their contents. In rural places what is in the midden and cesspool is commonly disposed of on a garden or field belonging to the house, or awaits the convenience of a neighbouring farmer, who removes the stuff at his own cost or even pays a trifle for it. In Townships where W.C.’s, are in general use, the ashpit refuse is practically valueless, so that its removal has to be paid for, and often land has to be found on which to tip it. Certainly it is one of the duties of the Local Authority to arrange for this work being regularly done and at short intervals. In this County the Local Authorities which have undertaken the

work have commonly contracted for its being done under the supervision of the Sanitary Inspectors. The work is probably better carried on when done by the Authority's men, with the Authority's appliances, without the intervention of a contractor. Of course where pail-closets are provided there is more than usual need for regular and frequent emptying. The pails should be supplied in duplicate, and each pail should be cleansed after emptying, and charged with a disinfectant. Cesspools should obviously be emptied at night, and if practicable, pails also. As to frequency, all Medical Officers of Health are agreed that the emptying should be done at short intervals, but as a fact the pits are not ordinarily emptied till they are full or nearly full. This is all that "well attended to" or "fairly well attended to" commonly means. The Medical Officer of Health of the Chester Rural District advises that the emptying should be done weekly or fortnightly, but it is very difficult to insure this being done. Pails should certainly be emptied at least once a week, but as regards middens a monthly emptying will satisfy most Authorities. The Medical Officer of Wallasey, where arrangements were made for emptying every six weeks, reports that the collection of night-soil and refuse has not been satisfactory in spite of the precautions taken, and the appointment of an Inspector whose sole duty it was to supervise it. The District Council eventually resolved to do the work with their own men and plant, instead of employing a contractor. The stabling and other buildings required to enable the Council to do this are now in course of erection, but will not be ready till late in 1897. Courts and back passages in this District are still unscavenged. Whether the rule be to empty the ashpit or midden once a fortnight or once in six weeks, it should of course be emptied at any time on complaint that it is full.

As regards the cost of this work, though the total sum paid is given by many Medical Officers of Health, it is difficult to compare the outlay in one district with the outlay in another, without full particulars of the work done and the way it is done. In one district (Sandbach) £95 was received for the saleable portion of the stuff collected—but this must be an unusual experience anywhere. At Crewe, where there are receptacles of all kinds, the cost of emptying was $4/5\frac{1}{4}$ per load in 1894. In 1895 the cost was reduced to $4/2\frac{1}{2}$ per load, and in 1896 it was further reduced to $3/11\frac{1}{4}$ per load. Though the cost is being reduced, the work is being more satisfactorily done year by year. In the Borough of Macclesfield the annual cost of refuse removal is reported to be $11\frac{1}{2}$ d. per head of the population. This appears to be about 2d. per head lower than the price paid at Crewe; but it is hardly fair to

compare the cost of removal in different towns, so much depends on the distance the material has to be carted before it can be tipped. Fourteen or fifteen pence per head may not be too much to pay for this work provided it be properly done. Paying a little more for removal is wiser than depositing the refuse on land which may soon be used for building sites. Special arrangements should be made for the collecting and destroying of trade refuse from poulters, fishmongers green-grocers, &c., as if this is not done, nuisances therefrom are almost certain to arise, especially during warm weather. At Crewe the carts for carrying the dry ashes as well as the night-soil carts are covered. The comfort of the nightmen is also considered, and they are provided with hot coffee when at work.

Another duty of the Authority, in reference to refuse-removal, is to arrange tips in suitable situations sufficiently remote from inhabited houses, and providing such tips is often a difficult task. Privy-refuse should of course be used promptly on the land.

The use of Pails containing Acidulated Peat, a full account of which was given in the Annual Report for 1894, is still in practice in the Borough of Congleton. During 1896, there were 5102 loads of nightsoil removed, and 350 tons of peat manure manufactured.

The use of Acidulated Ashes.--In the last Annual Report was a reference to some experiments made at Crewe in mixing fine ashes and sulphuric acid, and treating crude night-soil therewith. These experiments were sufficiently successful to warrant the Farm Committee in erecting covered sheds and a mechanical screen worked from the engine-house, to carry on operations conveniently and continuously. The dry ashes are brought from town to the Sewage Farm in a covered cart and deposited under cover, near the screen on which they are thrown by hand. The screen is a "two-decker" and as it moves the broken crockery, glass, tins, &c., are thrown off the top screen to a heap from whence they are removed and used as bottom ballast for the farm roads. The lower screen catches the combustible matter (chiefly cinders) which is put in the stoke-hole and used to raise the steam. There is left only the fine ash under the screen, which is wheeled to another part of the shed and spread on iron plates covering the flue leading from a small furnace to the boiler chimney. This small furnace is used for the combustion of paper and large articles which could not be conveniently put in the stoke-hole, and supplies heat to the flue over which the fine ashes are spread. When the ashes are fairly dry they are sprinkled, from a leaden watering-can, with commercial sulphuric acid to the extent of about 4 per cent. by weight. After a

few days the acidulated ashes are wheeled into the mixing-shed and thrown on the top of the crude nightsoil which has been tipped there during the previous night. But little mixing is required, and the whole mass soon becomes in appearance very like ordinary soil. From an analysis which has been made, the manure is found to contain 26 per cent. of organic matter (nitrogen 0.9 per cent.) and phosphate of lime 1.6 per cent. The reports from the farmers who, in 1895, used the manure made in the open air were sufficiently satisfactory, and there is reason to believe the manure made in 1896 will be still more effective.

Destructors.—The best way of dealing with midden-refuse is by means of cremation in specially constructed furnaces known as destructors. The process is cleanly and simple. The refuse is packed into large close furnaces through holes at the top and burnt. That which is combustible, after being subjected to an intense heat for a long time, is drawn at the lower part of the furnaces in the form of vitrified cinders or slag, and this as soon as cool is either thrown into a mortar-mill and ground (taking the place in the mortar of clean sharp sand) or used for path making or some similar purpose. Any iron-waste drawn with the slag is sorted out and finds a ready market.

Very little indeed was done in 1896 towards providing destructors. In Wallasey, where a destructor having six cells was opened in the latter half of 1895, all the refuse cannot be dealt with, and six new cells are being added. In the Report from Dukinfield the Authority is advised to provide a destructor.

Sewering.—The work of draining and sewerage has been carried forward in almost every part of the County in 1896. At Congleton Borough 12 streets (having a total length of 2,306 yards) were sewered and 139 houses re-drained throughout. At Macclesfield Borough sewerage was going on all the year. The execution of the main drainage works was begun on October 7th, 1895, and by the end of the year 1,936 yards of sewers had been laid. By the end of 1896 the whole of the sewers—a total length of about 14,250 yards—had been laid. At the Disposal Works there have been constructed 3 rectangular precipitation tanks, having a total holding capacity of 306,700 gallons, and 2 circular tanks, having a total holding capacity of 127,800 gallons. A large flushing tank has been placed at the south end of the sewer. At Stalybridge the Corporation are engaged in carrying out an important scheme by which all sewage will be delivered at a sewage farm instead of being turned into the river, and considerable progress has been made with this work during the year. Good progress has been made at Bredbury and Romiley. Eighty houses

have been connected with the new main sewer at Romiley, and the length between Hatherlow and Otterspool Bridge has been proceeded with by laying 625 yards of 18 in. sewer and 903 yards of 15 in. sewer. A branch sewer, 176 yards long has been laid in Guywood Lane, and the contract for a sewer, 234 yards long, in Church Lane, has been let. The District Council have approved plans for outfall works at Otterspool Bridge, and these are now in course of construction. The Council have applied for a Provisional Order to enable them to erect a pumping station at Lower Bredbury, to pass the sewage on from there to Otterspool. At Cheadle and Gatley the outfall works were completed and opened in March, and have been in regular use since, and doing satisfactorily. One portion of the main drainage scheme is still unfinished. Eight streets have been sewered during the year, and the houses abutting on them connected with the sewers. Dukinfield is, with Stalybridge, taking its sewage to Bradley Hurst Farm, where it will be treated by precipitation and filtration. In the Hoylake and West Kirby District, Meols Road has been sewered and an Adams' lift has been installed to automatically lift the sewage. At Knutsford, the King Street sewer has been extended 64 yards, and now serves houses which previously drained into the river. At Mottram, progress was made in connecting houses with the new main sewer. At Nantwich town the main sewers have been extended, about 170 yards having been laid in Wellington Road, and about 80 yards in Cemetery Road. In the Neston and Parkgate District work has been undertaken during the year for the further sewerage of Little Neston. In Northwich Urban District the land at the outfall works which had subsided so much as to interfere with its efficiency, has been for half its extent raised, re-levelled and subsoiled; the settling-tanks have also been raised and made more capacious. At Sale, owing to objections made on behalf of the Local Government Board, the carrying out of the sewerage scheme has been delayed. At Sandbach two new branch sewers, one from the Heath, and the other from Park Lane, have been laid and are in connection with the outfall sewer. The sewerage works for dealing with all the sewage of the district, except that from Wheelock and a few houses in isolated situations, are in course of construction. At Wallasey, the re-construction of old and defective sewers was proceeded with, and towards the close of 1896 the District Council resolved to spend about £30,000 for improvements in the main sewers. At Wilmslow good progress has been made with the northern drainage scheme, and 104 houses have been connected. The Report on the joint scheme for sewerage such parts of Yeardsley-cum-Whaley and two neighbouring districts as can be dealt with at one outfall, has been submitted and approved,

but has not yet obtained the sanction of the Local Government Board.

In the Rural Districts also, sewerage and sewage works seem to have full attention, but much remains to be done. In the Bucklow Rural District not much progress has been made in carrying out the Hale drainage scheme. An agreement has been entered into by the trustees of the Stamford Estate, the Rural District Council and the Altringham Urban District Council for the draining of Hale Moss, which has been in a state of nuisance for a long time. In the Chester Rural District the arrangements for the purification of sewage at Eaton and Eccleston by means of lime and herring-brine, continue to work satisfactorily. In the Disley Rural District the works for sewerage the village of Disley were commenced. The scheme for sewerage Furness Vale is still in the hands of the engineers. In Macclesfield Rural District, a Local Government Board inquiry was held with reference to the scheme for dealing with the sewage of Poynton, and an intimation has been since received that the Board required that more land should be obtained for disposal purposes. Efforts are being made to obtain this. The Macclesfield Town Council have been approached with a view to their receiving the sewage of Prestbury and Tytherington into their main sewer. In Malpas the tanks at the three outfalls of the main sewers have been considerably improved in construction and arrangement during the year. In the Northwich Rural District the sewers have been extended at Rudheath and Weaverham. Plans of new outfall works for Barnton have been prepared, and a Local Government Board inquiry has since been held, but the Board's decision has not yet been received. The Sandiway joint action by the County and District Councils, in laying a new drain for 900 yards, has removed a nuisance caused by flooding of road and houses. In the Runcorn Rural District the sewers have been extended for 308 yards. In the Stockport Rural District the filter-beds at Offerton have been removed and improved ones constructed. At Handforth a drain of 80 yards has been laid in place of a ditch-sewer. In the Tarvin Rural District, the plans for sewerage Tattenhall have been varied, but difficulties have been experienced in obtaining a suitable site for outfall works. In the Wirral Rural District, some improvements in the sewerage of Childer Thornton, Heswall and Willaston are still in progress.

Flushing of Sewers and Drains does not appear to be done at all generally, yet it is most useful work and will well repay time and money spent on it. In several of the reports are references to the matter. In the Macclesfield

Borough main drainage sewers just completed, flushing arrangements have been provided. At Alsager it is reported that the general condition of the sewers has been improved as a result of better flushing. At Lower Bebington a good portable tank is used for flushing. The Medical Officer of Health for Bollington recommends that a portable tank be obtained for that district. At Bromborough, Hoylake and West Kirby, and also at Neston and Parkgate the sewers are flushed weekly, except at Little Neston where the flushing is not done so frequently. At Dukinfield the Medical Officer of Health thinks that in the greater part of the district flushing of the sewers is unnecessary. At Northwich town and Winsford systematic flushing is carried out. At Wallasey sewers and house-drains are systematically flushed throughout the year, and arrangements are made for the special flushing of the drains of houses where infectious disease has been notified.

Sewer Ventilators.—From time to time complaints are made of effluvia from sewer ventilators. This is usually due to there not being sewer ventilators enough, or to the sewers being "sewers of deposit." If sewers were systematically flushed there would seldom be ground for such complaints. In Sale, which seems to be specially liable to suffer from this nuisance, there was very little complaint during 1896. At Crewe there were not so many complaints as in former years. In the course of 1896 all the man-holes in the town which had catch-pit bottoms (there were nearly 300) were altered, so that the flow of sewage along the sewers should be continuous. At Hyde many sewers still require proper ventilation. At Bollington, where some of the old sewers admittedly contain deposits, it is recommended that sewer ventilators be placed in suitable positions, and that a portable tank be provided. At Knutsford to abate nuisances from effluvia, 2 man-holes were sealed up and 2 ventilating shafts fixed to the main sewer. At Great Saughall, in the Chester Rural District, the sewer is being ventilated by upright shafts.

Pollution of Rivers and Streams.—A few notes in some of the Reports refer to this, and are not unimportant. The river Tame is again referred to as nothing but an open sewer. At Sandbach, all the sewage at present runs into the brook that passes by the town and joins the river at Wheelock. At Alsager, the sewage contamination of the Talke and Audley Watercourse has been effectually stopped by the District Council taking over the offending sewer and connecting it with their system. Complaints are still made in this District of the pollution of the Alsager Brook by chemical products. Measures were taken in 1896, and are still being taken for the abatement of this nuisance. In the Bucklow Rural District, owing to

complaints received of the pollution of Timperley Brook by waste matters from a steam laundry, notices were served on the owners, under the Rivers Pollution Prevention Act, 1876. In the Tarvin Rural District, proceedings were taken against the proprietors of a bone works, restraining them from discharging offensive liquids into a water-course. In the Northwich Rural District, proceedings were taken against a Company for polluting the river Dane with waste material from their works, and were successful. It may be mentioned also that pollution of the river Etherow by waste liquor from a large calico printing works was dealt with effectively by the Mersey and Irwell Joint Committee during the year.

The Rivers Pollution Prevention Act, 1893.—It may be well here to draw attention to an Act passed in 1893, with the object of strengthening the Rivers Pollution Prevention Act, 1876. It enacts that “where any sewage matter falls or flows, or is carried into any stream after passing through or along a channel which is vested in a Sanitary Authority, the Sanitary Authority shall for the purposes of section three of the Rivers Pollution Prevention Act, 1876, be deemed to knowingly permit the sewage matter so to fall, flow, or be carried.”

Dwelling-houses unfit for Habitation.—Not much seems to have been done in the Administrative County, during 1896, in closing houses unfit for habitation or rendering them habitable. In the Report for 1895 the Medical Officer of Health for the Borough of Hyde reported Fernaley Court to be “in so unsatisfactory a state that it is unfit for human habitation, and cannot possibly be made fit.” It appears that the houses in this Court are still occupied, for in the Report dealing with 1896 it is again stated “these houses should be closed at once as quite unfit for habitation, and as being incapable of being made so.” In Bardsley Court, Hyde, is “a very small dark house surrounded by privies and ash pits, full to overflowing,” which is “quite unfit for human habitation.” In the same Borough are houses off Stockport Road, which should be converted into double houses by making doorways in back-to-back walls or (where this is not possible) closed. Single houses at the back of Stone Pit, in Treacle Hill and Perrin Court, Gee Cross, and in Back Spring Street, are unfit for habitation and should be closed at once. At Stalybridge 2 houses were closed by order of the Council, and on the landlord afterwards letting them he was summoned and fined. In the same Borough 19 properties were during the year put into habitable condition by the Borough Surveyor. In Middlewich 14 cottages were certified as unfit for habitation during 1896—3 have been since put in habitable condition. In the Hoylake and West Kirby District 1 house was closed, and in Nantwich town 5 houses were pulled down during the

year. In the Wallasey District no houses were closed by order of the Authority in 1896. Brewers' Buildings (a block of back-to-back houses previously reported as insanitary) still stand. There were two cases of typhoid fever in these houses during the year. In the Macclesfield Rural District 1 house reported as unfit for habitation was pulled down and rebuilt. In the Nantwich Rural District 7 houses were closed as unfit for human habitation. In the Northwich Rural District 4 cottages were closed, in Stockport Rural District 3 houses were closed, and in Runcorn Rural District 1 house was closed. At Childer Thornton a large block of back-to-back houses, known as "the barracks," erected more than fifty years ago for the accommodation of men employed in the construction of the Chester and Birkenhead Railway, has been acquired by Mr. H. A. Latham, and by him pulled down. It is being replaced by neat, well-planned cottages.

Overcrowding.—Judging by the Reports there is no great prevalence of overcrowding. In most of the West Cheshire Districts it is noted that cases are occasionally reported, but they are infrequent. In Altrincham there were 10 cases, in Wallasey 11 cases, in Runcorn Town 2 cases, in the Runcorn Rural District was 1 case, and in Bredbury was 1 case. In the Towns of Northwich and Sale were many cases, which were promptly dealt with. In the Marple District the Medical Officer of Health reports that he knows of "several cottages where three or four grown up persons, unmarried and of both sexes, sleep in the same bedroom." This is a bad record. In the Bucklow Rural District 13 cases were investigated during the year. This nuisance is common at Pickmere in the summer. A prosecution was undertaken in one case at Timperley, which was successful. In the Congleton Rural District 7 cases, and in the Stockport Rural District 3 cases were reported and effectually dealt with.

The Housing of the Working Classes Act, 1890.—Houses unfit for human habitation can be generally more satisfactorily dealt with under this Act than the Public Health Act. This Act consolidates and amends many previous Acts on the same subject. Its object is to secure the closure of insanitary dwelling-houses, and when necessary their demolition and replacement by sanitary dwelling-houses. It is applicable throughout the United Kingdom.

Part 1—Unhealthy Areas.—It is made the duty of the Medical Officer of Health to officially inform his Authority when he finds (*a*) any houses, courts or alleys are unfit for human habitation, or that (*b*) the narrowness, closeness, and bad arrangement, or the bad condition of the streets and houses, or groups of houses within an area, or the want of light, air, ventilation, or proper conveniences, or any

other sanitary defect, make the given area dangerous or injurious to the health of the inhabitants of the area, or of their neighbours; and that the evils connected with such houses, courts, or alleys, cannot be effectually remedied otherwise than by an improvement scheme for their rearrangement and re-construction. And the Authority, if satisfied of the truth of the information thus given them, and of the sufficiency of their resources, are required to make a scheme for the improvement of the area. The Medical Officer of Health is required on complaint from ratepayers to report on the condition of any area complained of as being unhealthy. The improvement scheme must provide for the re-housing of the members of the working classes displaced by it. In assessing compensation to be paid owners of houses in the condemned area, deductions are made for sanitary defects, and where a house cannot reasonably be made fit for human habitation, only the value of land and building material's need be paid.

Part 2—Unhealthy Dwelling-houses.—It is made the duty of the Medical Officer of Health of every District to officially inform his Authority of any dwelling-house which appears to him in a state so dangerous or injurious to health as to be unfit for human habitation; and he may be called upon on complaint of householders to report on the condition of any house. The Authority are required to cause inspections to be made from time to time of their District, to ascertain whether any dwelling-house is unfit for human habitation, and they must forthwith take the necessary proceedings, before a Justice, to obtain a closing order on receiving a report of a house unfit from their Officer. When a closing order has been made, and the Authority are of opinion that the dwelling-house has not been rendered fit for human habitation, they may order the demolition of the building, time being given the owner to attend and state his objections. It is also made the duty of the Medical Officer of Health to officially inform his Authority of “obstructive” buildings. If any building in his District, though not in itself unfit for human habitation, stops ventilation, or otherwise conduces to make other buildings unfit for human habitation, or prevents proper measures being taken to abate nuisances, it is his duty to report the facts to his Authority, who shall order the demolition of the buildings, after compensating the owner.

Part 3—Working Class Lodging houses.—By this part of this Act, which is “adoptive,” power is given to Local Authorities to build lodging-houses, dwelling-houses, or cottages for the working classes, or to purchase or lease those existing, and make bye-laws for their regulation and manage them. Power is also given to Local Authorities to acquire land for the purposes of this part of this Act.

The Housing of the Working Classes Act, 1894.—

This explains the provisions of Part 2 of the Housing of the Working Classes Act, 1890, with respect to powers of borrowing under a scheme for reconstruction.

It is surprising how little action has been taken under the Act of 1890. In the few instances in which unhealthy dwelling-houses were closed in the County in 1896 (already referred to), they were, with few exceptions, closed by means of an order under Section 97 of the Public Health Act, 1875.

The Medical Officer of Health for Crewe reverts to a suggestion made in his Report for 1895, that the Corporation of Crewe should establish a Municipal Lodging-house of say 100 beds. He is of opinion that such an institution would do an incalculable amount of good directly and indirectly, and that under judicious management it would prove self-supporting.

New Houses and Building Bye-laws.—The Medical Officers of Health in many Districts supply information as to the number of houses built, as some gauge of the progress made. Erecting new dwelling-houses is obviously the one effectual remedy for overcrowding, and if good building bye-laws are in force in the district, and the houses are well-built and drained, and fitted with proper sanitary appliances, the Local Authority is thereby placed in a better position for dealing with insanitary property. On the other hand, if there are no good building bye-laws in force, and each builder is suffered to do that which is right in his own eyes, new buildings instead of being a source of strength are a source of weakness in a District.

In Dukinfield, where the bye-laws were adopted in 1857, the Committee appointed in 1894 to arrange bye-laws up to date, have done so and their draft has been submitted to the Local Government Board for approval. However, at the close of 1896, the Medical Officer of Health reports that "for some reason or other" the new bye-laws are not in use. At Bredbury and Romiley and at Bollington the bye-laws need revision. At Neston and Parkgate the model bye-laws of the Local Government Board with respect to new streets and buildings have been in force since the latter end of 1893. These bye-laws were adopted a little earlier in the Chester Rural District. Building bye-laws have been for years in force throughout the more populous parts of the Wirral Rural District. During 1894 these were carefully revised by Mr. Priest (Messrs. Beloe and Priest) in conjunction with the Medical Officer of Health, at the request of the Authority. The revised bye-laws are now in force throughout the district. In the Bucklow Rural District revised building bye-laws have been prepared, and the draft is now before the Local Government Board. The District Surveyor recommends the

Council to have the drains of all new houses tested by the "water test" before permission is given to occupy the houses. At Hale a summons was taken out for infringement of bye-laws and a conviction obtained. The Nantwich Rural District has had urban powers in respect of new buildings for a number of years, and since these powers were conferred no less than 1,788 plans for new buildings have been examined and passed by the Surveyor. In Northwich Rural District plans for 59 new houses were approved during the year; in Stockport Rural District plans for 106 new Houses were approved; in Macclesfield Rural District plans for 20 new houses and in Macclesfield Borough plans for 25 new houses were approved. There were 50 in Cheadle and Gatley, 35 in Bredbury, 29 in Romiley, 46 in Marple, 19 in Nantwich town, 12 in Hoole, 6 in Lymm, and 5 in Neston and Parkgate. In Hoylake and West Kirby 53 houses were built and 90 were in course of erection during the year. Generally, it may be said that, with a few notable exceptions, there was no great activity in building operations during 1896. Nearly the whole of the village of Thornton Hough (in the Wirral District) has been completely rebuilt by the proprietor, Mr. Lever, in handsome half-timber work, each house having a fixed bath and modern conveniences.

New Streets.—The work of making new streets proceeds but slowly. In Hoole, Hoylake and West Kirby, and a few other "residential" districts fair progress is made, but generally little seems to have been done.

School Accommodation is a subject that may well come within the observation of the Medical Officer of Health, yet it is referred to in very few Reports. In the Borough of Crewe there is accommodation for 7,723 children—an increase of 1,007 upon the accommodation of 1895. These schools are inspected, and the teachers notify on forms supplied by the Authority any scholar suffering from measles, mumps, whooping-cough or chicken-pox. The Medical Officer of Health for Cheadle and Gatley reports that he has inspected the elementary schools and generally found the sanitary arrangements satisfactory. In two instances the playgrounds were required to be re-drained, and this was done. At Knutsford, the schools were frequently inspected and always found clean. At Marple, the schools are reported to be clean and well ventilated. At Wallasey, the infant school in School Lane is reported as defective in various ways.

Workshops.—Among the duties of sanitary officials is the inspection of workshops, *i.e.*, places in which manual labour is exercised by way of trade, to the exclusion of steam, water

or other mechanical power.* However there is very slight reference to workshops or their inspection in the Districts within the administrative County. The Medical Officer of Health for the Borough of Crewe reports that there are 102 factories and workshops, of which 62 class as workshops. All were visited during the year, and in three instances in which there was not separate sanitary accommodation for the sexes, it was ordered and provided. The Medical Officer of Health for the Borough of Hyde reports that many of the closets in the cotton factories require to be cut off from the work-rooms by cross ventilated lobbies. At Altrincham, the workshops are inspected during the year; one was required to provide a new water-closet. At Marple, factories and workshops are reported to be well kept and looked after, and sufficiently ventilated; and at Nantwich they are regularly inspected and in order. At Runcorn Urban District, the 23 workshops in the town were inspected, and there was no cause of complaint. At Sandbach, both factories and workshops are reported to be inspected and found in a satisfactory state. Two of the largest are being provided with new water-closets. At Wallasey, the workshops are being measured; a list will be prepared and arrangements made for their systematic inspection. One (a tailor's) was found to be ill-ventilated and overcrowded. In the Wirral Rural District the workshops receive attention. The Inspector for the Bucklow Rural District promises to arrange for the workshops there (about 20) being inspected.

Lodging-houses.—Common lodging-houses, that is lodging-houses in which persons of the poorest class are received for short periods, and though strangers to one another are allowed to inhabit one common room, were doubtless fairly well inspected, but the fact that every common lodging-house must be registered seems to have been overlooked in some districts.

In Crewe there are 6 registered common lodging-houses in the Borough, but one (registered for 10 beds) is closed. The remaining 5 have accommodation for 104 lodgers. As regards 3 houses the Medical Officer of Health has had great difficulty in obtaining compliance with the bye-laws. In August the keepers of these houses were summoned for contravening the bye-laws and were fined £1 2s. 6d. and £3 16s. od. costs. Since then 2 of the houses have passed into other hands, and a slight improvement has been observed. At Hyde, in Charles Street, is a

*It is important to note that workshops in which bleaching or dyeing is carried on, or letter-press printing or book-binding, or in which matches are made, or tobacco is manufactured, are factories, even though no mechanical power be used, and *not* inspected by sanitary officials. Fustian-cutting rooms are also factories, and so are earthenware works, glass works, cartridge works, percussion cap works, metal and India-rubber works, flax scutch mills, paper mills, paper staining works and print works, though no mechanical power be used.

lodging-house, which has been registered many years, yet the Medical Officer of Health reports that he does not know a more unsuitable place for a lodging-house.

At Macclesfield Borough are 20 registered common lodging-houses in use. An average of 170 persons per night were accommodated. There were 780 visits of inspection paid during the year. The Medical Officer of Health for Stalybridge reports that he has many times visited all the registered lodging-houses within the Borough, and found them in fairly sanitary condition. The 5 common lodging-houses at Nantwich town have been visited almost daily, and occasionally night visits have been made. The reports from Northwich town, Hollingworth, Mottram, Knutsford, Runcorn, Sandbach, Wilmslow, Winsford and the Congleton Rural District state that the common lodging-houses were inspected and found in order. At Altrincham all but one were satisfactory. The reports from Sale and the Runcorn Rural District state that the common lodging-houses are inspected. In Middlewich are 7 common lodging-houses frequently inspected and generally found satisfactory, but only 3 are licensed. One keeper was prosecuted for receiving lodgers without a licence, and a conviction obtained. At Higher Bebington, Cheadle and Gatley, Dukinfield, Lymm, and in the Nantwich Rural District and Tintwistle Rural District there are no common lodging-houses.

Houses Let in Lodgings.—Any Local Authority may, with the consent of the Local Government Board, make bye laws for fixing the number of persons who may occupy a house or part of a house which is let in lodgings and for the separation of the sexes in a house so let; also for the registration and inspection of houses so let, for enforcing drainage and the provision of privy accommodation, and for promoting their cleanliness and ventilation, for the cleansing and lime-washing of the premises at stated times, and the paving of courtyards, and for the giving of notices, and taking precautions in case of any infectious disease. This is a very useful power (enabling Authorities to have control over a class of lodging-houses which could not be regulated as common lodging-houses), and to assist Authorities in making use of it, model bye-laws have been issued. Still it appears that only two districts in the County (Crewe and Wallasey) have bye-laws relating to houses let in lodgings. Those for Wallasey were made in 1895, and have but recently received the sanction of the Local Government Board.

Water-supply.—By the Public Health Act, 1875, power is given Local Authorities to construct necessary waterworks, two months' notice of their intention being given to allow of

objections being heard by the Local Government Board. The supply must be maintained pure and wholesome, and at a pressure which will carry it to the top story of the highest dwelling-house in the district supplied. The Authorities may supply to public baths or wash-houses or for trade purposes on terms agreed on, or may gratuitously supply public baths or wash-houses, established otherwise than for private profit; and Urban Authorities must provide and maintain fire plugs, &c., for securing a sufficient supply in case of fire. When the water of any well, tank, cistern, or pump, used for drinking purposes, is reported to an Authority to be so polluted as to be injurious to health, they may apply to a Court of Summary Jurisdiction, and the Court may cause the water to be analysed at the cost of the Local Authority, and may make an Order temporarily or permanently closing the well. Where on the report of the Surveyor of a Local Authority it appears to such Authority that any house within their district is without a proper supply of water and that such a supply of water can be furnished thereto at a cost not exceeding the water-rate authorised by any local Act in force within the district, or where there is not any local Act in force at a cost not exceeding twopence a week, or at such other cost as the Local Government Board may, on the application of the Local Authority, determine under all the circumstances of the case to be reasonable, the Local Authority shall give notice in writing to the owner, requiring him, within a time therein specified, to obtain such supply, and do all such works as may be necessary for that purpose. If such notice is not complied with within the time specified, the Local Authority may obtain such supply, and water-rates may be made and levied on the premises, and any expenses thus incurred by the Authority may be recovered in a summary manner from the owner of the premises or may, by order of the Authority, be declared to be private improvement expenses.

The Public Health (Water) Act, 1878, amends the Public Health Act, 1875, as far as relates to water-supply. It makes it the duty of every Rural Sanitary Authority to see that every occupied dwelling in their District, has within a reasonable distance an available and sufficient supply of wholesome water. If the Medical Officer of Health or Inspector report that a house is without such supply, and the Authority are of opinion that it can be provided at a reasonable cost, not exceeding a capital sum the interest on which at the rate of five per cent. per annum would amount to twopence per week (or at such other cost not exceeding a capital sum the interest on which at the rate of five per cent. per annum would amount to threepence per week, as the Local Government Board may, on the application of the Local Authority, determine under all the circumstances of the case to be reasonable, &c.) they shall serve a notice

on the owner, requiring him, within a specified time to provide a water-supply, and at the expiration of this time, if the notice is not complied with, the Authority may serve another notice stating that if the requirements of the first notice are not complied with within a month, they will provide such a supply, and recover the expense from the owner. This provision does not exempt the Authority from the duty (imposed on them by the Public Health Act, 1875) of supplying their District in cases where danger arises to the health of the inhabitants from the insufficiency or unwholesomeness of the existing supply and a general scheme of supply is required, and such supply can be got at a reasonable cost. It is not lawful in any Rural District for the owner of a dwelling-house, built or rebuilt from the ground floor, after the date of the commencement of this Act, to allow the same to be occupied without having obtained a certificate from the Sanitary Authority that a sufficient supply of wholesome water is available. It is made the duty of the Rural Authority, from time to time, to ascertain the condition of the water-supply within their District.

These powers would be sufficient to enable every Authority to obtain an adequate and wholesome supply for every household, if it were not for the restrictions conveyed in the word "reasonable cost." It often happens that the Medical Officer of Health or Surveyor or Inspector reports that a house is without a sufficient supply of wholesome water, but the Authority are not of the opinion that the supply can be provided at a reasonable cost, and so no action is taken, or supposing danger arises to the health of the inhabitants of a District from the insufficiency or unwholesomeness of the existing supply, and a general scheme of supply is required, if such supply cannot be got at a reasonable cost, the supply is not got. It thus happens that powers relating to the provision of Water in the Public Health Act, 1875, and the Public Health (Water) Act, 1878, are in great part inoperative. The Local Authorities are not to blame for this, for often supplying an outlying farmhouse, or carrying out a general scheme of supply in a remote sparsely populated District, is manifestly such an expensive undertaking it would be impossible to be of opinion the work could be done at reasonable cost. No one is particularly to blame, but as long as the powers given have such limitations, the water-supply in many districts will be insufficient, and shallow wells, so liable to pollution from the surface, will be used.

There is a Bill at present before Parliament, entitled the District Councils Water Supply Facilities Bill, which should it pass, will probably be especially helpful to those who are endeavouring to obtain a proper water-supply for

houses in sparsely populated localities. The object of this Bill is to give facilities to District Councils to make arrangements with landowners to charge their estates for the purpose of assisting in the provision of a supply of pure water thereto.

The reports from the towns are as follows:—At Congleton Borough the service is constant, and during the year town's water was introduced into 50 houses not previously supplied. The supply for the Borough of Crewe is from Artesian wells at Whitmore. The Medical Officer of Health made regular monthly analyses of this, and found it of uniformly good quality, varying only a few degrees in hardness. The water supplied to Stalybridge is reported to be “absolutely pure and abundant.” At Alderley Edge the quantity is adequate, but there have been many complaints as to hardness, and in the early part of the year the colour was not satisfactory. At Alsager about 1,566 yards of water-mains were laid in 1896, bringing the public supply within the reach of various properties with doubtful or condemned or insufficient supplies. During the year 14 samples of suspected waters were examined by the County Analyst and with few exceptions pronounced unfit for domestic use. The District Council have given instructions with a view to obtain the closing of wells yielding such supplies. The supply for Ashton-upon-Mersey from the North Cheshire Water Works is excellent, but there is not sufficient for flushing purposes. Higher and Lower Bebington have a very good supply from the Wirral Water Works. At Bollington there is a bore-hole at present yielding 86,000 gallons per day. The work necessary to bring a further supply (from springs) to Bollington is being considered. Bowdon has a good supply from Manchester. The water at Bredbury and Romiley has been on the whole satisfactory, but the pressure has been insufficient to maintain a constant supply in the higher parts of Woodley. The better supply of these parts is being considered. The town's water has been laid on to 31 houses during the year. Bromborough has a very good supply from the West Cheshire Water Works. At Buglawton, where the local Water Works were completed in 1895, most of the inhabitants have availed themselves of the new supply, and the quantity has proved ample. Cheadle and Gatley have a sufficient supply from the Stockport Water Works, however during the summer the water was quite unfit for domestic use owing to its muddiness. Several wells supplying houses at a distance from the mains were during the year cleansed, repaired, and covered. Dukinfield, the town of Ashton-under-Lyne, in Lancashire, and Stalybridge jointly own the district Water Works. The water is gathered from springs and streams in the Swineshaw Valley, and is pure and abun-

dant, the gross daily supply being upwards of $17\frac{1}{2}$ gallons per head. The report from Hollingworth and Mottram is that the supply is abundant and good. Hoole is supplied by the Chester City Water Works, except at Piper's Ash where the water is derived from wells or springs. Hoyle and West Kirby have an excellent supply from deep wells at West Kirby. The Company supplying water to Knutsford have yielded to the public demand for a purer water and are boring for a new supply at a considerable depth. By Christmas, 1896, the boring had reached a depth of 330 feet, and it is expected that water may be reached at any time after 450 feet is passed. At Middlewich one of the most important events of the year was the completion of the Water Works and the installation of the public supply. Nantwich Urban District is supplied from the Baddiley Water Works. Throughout the year the supply has proved adequate. Neston and Parkgate have a very good supply from the District Council's deep wells. During the year 2800 yards of mains were laid. The water-supply for Northwich town (from the springs at Cote Brook) is reported to be very pure. Runcorn Urban District has a good supply from a deep well. The town supply of Sandbach continues to give satisfaction. The water is pure and soft, and the quantity ample. With few exceptions all the houses in the district, on the pipe line, where the private supply has been condemned, have been connected with the District Council's mains. Tarporley is well supplied from the Liverpool Water Works. The water is soft and care is taken not to use lead pipes in any part of the house service. At Wallasey there is a good supply; the average quantity used per head per day, in 1896, was upwards of 38 gallons. The water supplied to Wilmslow, by the Stockport Water Company was at one time much complained of. Latterly, except for its hardness, it has been satisfactory. The Winsford supply is abundant and good. At Yeardsley-cum-Whaley the new reservoir at Stoneheads supplies a part of the district. For the supply of the remainder of the district the Council have a scheme for obtaining a supply (jointly with other districts) from Taxal.

Supplying Rural Districts with sufficient water of good quality is, of course, relatively much more difficult and costly than supplying Urban Districts, and for the reason already given is often impracticable. The reports from the Rural Districts are as follows:—In the Bucklow District, the North Cheshire Water Company supply Timperley, Dunham, Northenden, and part of Hale. In other parts of the District there is no good general supply. In some parts it is difficult to find a good water supply. The Manchester Corporation in 1896 supplied Carrington and Partington with water from their mains on the Lancashire

side of the Ship Canal. Of 49 samples analysed (as new supplies or owing to suspected pollution or illness on premises) 28 were found bad and condemned. In the Chester Rural District, part is supplied by the Chester Water Works and other parts by the Wrexham Water Works; elsewhere some of the houses have good well-water, and some water which is unsuitable or deficient in quantity. Efforts have been made to extend the mains, but the expense has proved a serious obstacle. The public pumps at Dunham, Ince and Upton have been repaired. In Congleton Rural District the mains were extended to Hassall Green during the year. Rode Heath, Thurlwood, and Lawton Heath are still very badly off for good water. Holmes Chapel, also, is in great need of a good supply, and there is excellent water in the neighbourhood. An efficient supply is required for Furness Vale, in the Disley District. During the summer of 1896 the usual supplies completely failed for several weeks, and water had to be carried from an adjoining district. In the Macclesfield Rural District, certain houses at Boston have been given an improved supply; and early in the year the water-mains of Buglawton Urban District were extended to Eaton Bank, 29 houses thus being given a continuous supply of excellent water. The scheme for supplying water to the village of Prestbury has been completed, and application made to the Local Government Board to sanction a loan of £600 for carrying it out. In Malpas Rural District there is a supply from the Liverpool mains but it is not constant, and in outlying parts the inhabitants are dependent on private wells and springs. The new public well at Cuddington yields a plentiful supply. In the Nantwich Rural District 128 houses were newly supplied from the public mains in 1896. Eight miles of mains were laid during the same period. Altogether, up to the present 119 miles of water-mains have been laid by the Authority, supplying 3232 houses. Several new pumps have been fixed at private residences and private supplies improved. Although so much has been done, much remains to be done. In particular, the supply of Audlem and Coole Pilate, with the districts surrounding them need prompt attention. In the Northwith Rural District, there are now works for water-supply in 23 Townships, and the supply to the Union Workhouse (in the Urban District) has also been maintained. Thus about 17,000 of the population have an uninterrupted supply. Of the remaining 5,500, about half have a fairly good supply from pump-wells, but the rest are much in need of good water. In the Runcorn Rural District the portions of Appleton known as Stockton Heath and Wilderspool have a good and plentiful supply of water from Warrington Water Works, and the greater portions of the villages of Walton Superior and Moore are supplied from the same source. The supply of a portion of Bartington is

still defective, and water is still needed at Dutton. Aston Heath is still in need of a good supply. The improved supply at Clifton continues satisfactory. Halton, Weston Point, and the village of Weston are supplied from the Runcorn Urban Authority's Water Works; and it is proposed to extend the mains to Halton Common. An inquiry has been held with reference to the water scheme for Sutton and sanction obtained for borrowing a portion of the cost. The village of Norton is supplied from the Liverpool Water Works, but the mains require to be extended. Alvarley still requires an improved supply. The Frodsham supply has proved a success and an extension has been carried out. Every house on the line of the mains has now been supplied. At Frodsham Lordship, the want of water is still pressing. There is still need of water in the upper part of Kingsley. At Norley the supply to Blackmere Lane continues unsatisfactory. In the Stockport Rural District a supply from the Stockport Water Works has for years been gradually taking the place of water from old wells and pumps. In the Tarvin District the supply is from shallow wells or surface springs, except at Aldford, where water from the Wrexham Water Works is supplied. Measures are being taken to supply Tiverton, Tilston and Beeston. In the Tintwistle District the water is reported to be abundant and good. Wirral is generally supplied from the Wirral Water Works, except Bidston-with-Ford, and Noctorum which are supplied from the Birkenhead Water Works.

There is a Report presented quarterly by the County Analyst giving particulars of the results of analyses of samples of water submitted to him from the Urban and Rural Districts, and the County Council take steps to ascertain what action is taken by the several Authorities for preventing water certified as bad or of doubtful purity from being used for domestic purposes. Out of 91 samples analysed in 1896, 10 were certified of doubtful purity, 18 as bad and unfit for domestic use, and 16 as very bad.

Dairies, Cow-sheds, and Milk Shops.—Under the Dairies, Cow-sheds, and Milk Shops Order it is unlawful for anyone to carry on the trade of cow-keeper, dairyman, or purveyor of milk unless registered by the Local Authority. No one is allowed to begin to occupy a building as a dairy or cow-shed unless he makes provision to the reasonable satisfaction of the Authority for its lighting and ventilation, including air-space and cleansing, drainage and water-supply, and he must give the Authority a month's notice in writing of his intention to occupy. Dairies and cow-sheds, new or old, can only be occupied as long as the lighting, ventilation, air-space, cleansing, drainage, and water-supply are such as are necessary for the health and good condition of the cattle, the cleanliness

of milk-vessels, and the protection of milk against infection or contamination. It is unlawful to allow any person suffering from a dangerous disease, or having been recently in contact with such person, to milk cows or in any way help in a milk business, and unlawful for a cow-keeper or dairyman to offend in a similar way. A milk store must not be used as a sleeping-room, or for any purpose incompatible with the cleanliness of the milk. No W.C.'s, &c., are allowed to communicate with a dairy or milk-store, and pigs are not allowed to be kept in a cow-shed. The milk of diseased cows must not be mixed with other milk, or be sold or used for human food, and must not be used for the food of swine or other animals until boiled.

Local Authorities may make regulations for the inspection of cattle in dairies, for prescribing and regulating the lighting, ventilation, cleansing, draining and water-supply of dairies and cowsheds, for securing the cleanliness of milk stores and shops and milk vessels, and for prescribing precautions to be taken against infection and contamination.

Doubtless the terms of this Order are very well known to the Medical Officers of Health and Inspectors in the County, and they endeavour in their various Districts to see that the law is carried out. Still in many Districts no regulations appear to have been made, and without precise regulations it is impossible to insure that premises, cattle, and milk are kept clean and in order. The Medical Officer of Health for Crewe reports that at not a single one of the 45 milk-shops in the Borough are milk and dairy produce exclusively sold. Most of the shops sell vegetables also, others groceries. Of the 59 cow-sheds in the Borough very few approach perfection. Regulations were made in 1892, but it is exceedingly difficult to obtain compliance with them. The Report from the Borough of Macclesfield is that there are 57 milk-houses registered by the Authority, and that 173 visits of inspection were made during the year. At Altrincham and Alderley Edge the dairies, &c. were visited and found satisfactory. At Ashton-upon-Mersey the dairies were inspected. At Higher and Lower Bebington the dairies, &c. receive attention, and are generally well kept. At Bollington there are 17 dairies and milk-shops, which on inspection were found clean and well kept.

The Medical Officer of Health for Bowdon reports that there "the arrangements with regard to the cow byres are disgustingly dirty. Each animal should have a sufficiency of pure air and daylight, whereas as a rule they have little of the former and none of the latter." At Bredbury and Romiley there are 54 dairies and cow-sheds, which are visited by the Inspector four times a year. The District

Council have made regulations similar to those recommended by the Local Government Board, except that 600 cubic feet of air-space are required for each cow instead of 800 cubic feet. No new cow-shed in the District will be allowed to have less than 600 cubic feet, while as many as possible of the old cow-sheds will be altered. At Bromborough there are 8 registered premises inspected, all in fair order. At Cheadle and Gatley are 50 dairies, &c., all well kept and clean. In Dukinfield there are 15 dairies, &c., to which 22 visits of inspection were paid. They were found in order. At Hoole there are 10 milk-shops all inspected. At Hoylake and West Kirby the milk-shops are inspected and in order. At Marple regulations have been newly made. In the Nantwich Urban District are 19 registered premises regularly inspected and satisfactorily kept. At Neston and Parkgate, and at Sale, the dairies are inspected. In the Northwich Urban District are 9 registered premises periodically inspected and kept clean. In the town of Runcorn are 38 milk-shops and 13 cow-sheds, regularly supervised and visited—only in two instances during the year was there cause for complaint. The dairies, &c., at Sandbach have been inspected and advice given as to their cleanliness. In the Tarporley District are five milk-farms inspected and generally in good condition. At Wallasey there are 24 cow-keepers, 20 dairymen and 46 milk-shop keepers. Of these 15 cow-sheds, 12 dairies and 14 milk-shops were found not complying with all the regulations. In Bucklow Rural District steps are being taken for the regulation of the milk trade. A register has been compiled showing 81 cow-keepers, 108 dairymen, and 49 purveyors of milk. Many inspections have been made of the premises of milk-sellers, and improvements affected in drainage and ventilation. The inspection of cow-sheds will be undertaken. In the Chester Rural District there are 83 dairy farms inspected, and defects are remedied as required. In the Macclesfield Rural District 19 premises were registered during the year. There are at present 351 persons registered. All the premises were visited and were generally found well kept. In the Malpas District the dairies, &c., are looked after by the Inspector, and any irregularities dealt with; but no regulations have been made. The dairies and cow-sheds in the Nantwich Rural District have been inspected as opportunity offered, but very little time could be given to the work. In the Runcorn Rural District dairies, cow-sheds, &c., were inspected. The Stockport Rural District Council have 19 premises registered as dairies, which are all visited from time to time by the Inspector. In the Tarvin District are 27 premises and in the Wirral District are 259 premises registered for the sale of milk and inspected.

Bakehouses.—The regulations as regards bakehouses are in the Factory and Workshops Acts, 1878 and 1883, and the Medical Officer of Health, in respect of bakehouses, has the powers of an Inspector under the Factory and Workshops Act, 1878. Bakehouses are defined as “any places in which are baked bread, biscuits or confectionery from the baking or selling of which a profit is derived.” Where a bakehouse is in a town containing over 5000 persons at the last Census, the inside walls and ceilings of its rooms and the passages and the staircases shall be painted with oil or varnished with three coats, to be renewed every seven years, and washed with hot water and soap every six months, or shall be lime-washed every six months. In similar bakehouses, no room on the level of the bakehouse and part of the same building shall be used as a sleeping place unless effectually separated by partition from floor to ceiling, and unless it has an external glazed window of at least 9 square feet, of which half is made to open. It is not lawful to let or occupy as a bakehouse a room not so let before June 1st, 1883, unless no drain for carrying sewage opens within the room, no W.C., privy, or ashpit communicates directly with it, and any cistern for supplying the bakehouse shall be separate from the cistern supplying the W.C. The occupier of any bakehouse whatever is liable to a penalty if the Local Authority’s Inspector satisfies a Court of Summary Jurisdiction that the bakehouse is, on sanitary grounds, unfit for a bakehouse.

These regulations, also, in all probability are known to all Medical Officers of Health and Inspectors in the County, yet there is little evidence in the Reports submitted that they are in force. In only 18 out of the 50 Reports received is there any reference to bakehouses. In the Districts these represent the bakehouses were inspected and found clean and in good order as a rule. The proportion of bakehouses to the population varies much in different Districts, for instance in the Boroughs of Crewe and Macclesfield the population is almost equal, yet in the first-named are 23 bakehouses and in the second 61. In the report from Hyde are particulars of an exceptionally insanitary bakehouse in Townsend Street. There were two gully traps inside, the closet was choked and without a good supply of water, the sink waste-pipe was directly connected, there was an accumulation of refuse at the back, pigs were kept on the premises, and the fumes from the ignition-tube of the gas-engine were escaping into the room, fouling the air being breathed by the work-people.

Unsound Meat, &c.—The statutory powers under which unwholesome food is now ordinarily seized and dealt with in the provinces are contained in Sections 116 to 119

of the Public Health Act, 1875. Any Medical Officer of Health or Inspector may at all reasonable times inspect and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, or milk, exposed for sale or deposited in any place for the purpose of sale, or of preparation for sale and intended for the food of man, and if any such animal, carcase, etc., appear to the Medical Officer or Inspector to be diseased, or unsound, or unwholesome, or unfit for the food of man, he may seize and carry it away in order that it may be dealt with by a Justice. If it appears to the Justice that the animal, carcase, etc., so seized is diseased, or unsound, or unwholesome, or unfit for the food of man he shall condemn the same and order it to be destroyed, etc., and the owner is liable to fine or imprisonment. Any person who obstructs or impedes an Officer when carrying into execution these provisions is liable to a fine. A search warrant may be obtained to search for unsound food kept or concealed in any building. The inability to examine and seize certain kinds of unsound food, and to examine and seize any food when sold, and the inability of the Justice to condemn certain kinds of unsound food, and food sold, and food not seized, have been remedied by Section 28 of the Public Health Acts Amendment Act, 1890. Any Urban or Rural Authority by adopting this section may effect the required change as far as relates to the Authority's District.

The powers of Medical Officers of Health and Inspectors to seize and obtain an order to destroy any kind of unsound food, are therefore ample; yet there appears to be very little food condemned in the County. Either there is practically no trade in unsound meat, &c., in this large County, or the trade is not interfered with. The subject is only alluded to in half-a-dozen reports, and in only 3 districts was any unsound food seized. In the Borough of Macclesfield, 90 lbs. of fruit were seized and destroyed. At Wallasey the amount seized was very large—81,683½ lbs. of meat (beef, mutton, veal and pork), and 20,726 lbs. of offal. Nearly all this was seized at the slaughter-houses in connection with the Foreign Animals Wharf. A small proportion was from the shops situated in the District. No proceedings were taken other than applications to Magistrates for orders to destroy the meat and offal seized. The only other district in which action was taken was the Winsford Urban District. On May 2nd, a carcase of unsound beef was seized and destroyed. The case against the owner was dismissed, owing to a technical irregularity in the proceedings. On September 4th, another carcase was seized and destroyed. In connection with this case, the owner was convicted and fined 10/-, and the license of his slaughter-house was revoked. On November 14th, a

quantity of meat was seized in the Market and destroyed. A conviction was obtained and fines of £5 and £3 imposed. On December 9th, a carcase was seized and destroyed. This time the owner was convicted and a fine of £20 imposed.

Slaughter-houses.—Urban Authorities may provide Public Abattoirs, for the regulation of which they may make bye-laws. It is a pity this power is so seldom used, as private slaughter-houses, whether licensed or not, are very liable to cause a nuisance. For the purpose of enabling any Urban Authority to regulate slaughter-houses within their district the provisions of the Town's Improvement Clauses Act, 1847, with respect to slaughter-houses are incorporated with the Public Health Act, 1875. The sections of the Town's Improvement Clauses Act referred to (Secs. 125 to 131) provide (a) that the Urban Authority may license such Slaughter-houses and Knacker's yards as they think proper, within their district (b) that no place may be used or occupied as a slaughter-house which was not in such use or occupation prior to the passing of the Act of 1875, or the formation of the district into an Urban District without first obtaining such license; (c) that slaughter houses used prior to 1875 are required to be registered but not licensed; and (d) that the Urban Council may make bye-laws for the regulation of slaughter-houses.

The Reports from 31 districts record that local slaughter-houses have been inspected and that they are, with few exceptions, generally well kept. In the Borough of Crewe there are 13 registered slaughter-houses, nearly all too small and ill adapted for the purpose. During the year the public slaughter-houses in connection with the Cattle Market were closed. The butchers so rarely used them that the lessee of the market found more profitable employment for the space occupied. In Macclesfield Borough are 28 registered slaughter-houses, of which 22 are in regular use. One house was licensed for the first time in 1896, on condition that the license be given up if at any time the Corporation provide an abattoir. The Inspector paid 552 visits of inspection. The Report from Bredbury and Romiley states that the slaughter-houses have in recent years been kept cleaner. In February, a cattle dealer was prosecuted for using an old cart-shed as a slaughter-house, and fined 10/- and costs. An application for a license for premises under the same roof as a row of cottages was refused. At Cheadle and Gatley the slaughter-houses, 6 in all, are still unlicensed. They are well kept and fairly clean. In one case alterations ordered have not been done. At Dukinfield are 15 slaughter-houses, 9 of which are in use. Many have not sufficient air-space or light, and

are situated in objectionable places. The Medical Officer of Health suggests that it would be an advantage to have a public abattoir. The Medical Officer of Health for Marple reports that the slaughter-houses there should be registered. The 16 registered slaughter-houses in the Nantwich Urban District were inspected weekly. In two instances the Inspector had to report the tenants for offences against the regulations. In one case legal proceedings were taken, but no conviction was obtained. In the Northwich Urban District the 15 registered slaughter-houses are visited monthly. At Wallasey the premises of the butchers in the town, no less than the abattoirs at the docks, are well inspected. The Medical Officer of Health for Wilmslow advises his Authority to provide a public abattoir. In the Rural Districts, the slaughter-houses are in many ways open to improvement.

Offensive Trades.—A person establishing an offensive trade in an Urban Authority's District, without the Authority's consent in writing, is liable under the Public Health Act, 1875, to a penalty and a further penalty for each day on which he carries on the trade. The trades mentioned in the Act are those of "blood-boiler, bone-boiler, fellmonger, soap-boiler, tallow-melter, tripe-boiler, or any other noxious or offensive trade or manufacture." When any of the preceding trades or any slaughter-house, or any place used for a trade process causing effluvia, is certified to an Urban Authority by their Medical Officer of Health, or any two medical practitioners, or any ten inhabitants, to be a nuisance or injurious to the health of any of the inhabitants of the District, complaint must be made before a Justice, and if it appears to the Court that the nuisance exists, and that the defendant has not used the best practical means for abating such nuisance he shall be liable to a penalty, and on repeated conviction to a higher penalty. The model Bye-laws of the Local Government Board include among offensive trades those of blood-dryer, leather dresser, tanner, fat melter, glue maker, size maker, and gut scraper.

There is very little reference to offensive trades in the Reports. In five Reports it is expressly stated that "there are no offensive trades" in the district. The Medical Officer of Health for Hyde mentions that permission was given in the autumn of 1895 to establish a knacker's yard and bone-boiling house. The place was not constructed and not worked as required, and a nuisance was created. Accordingly the Corporation refused to renew the license in 1896, and the yard was closed. In Wallasey District, the Manure Works at the Old Potteries, and 2 knacker's yards are reported to be conducted in a satisfactory manner.

Food Adulteration.—Mention is made in 4 Reports of action taken under the Sale of Food and Drugs Acts, by means of which adulteration is detected and punished. From Dukinfield it is reported that several cases of adulteration were proved. Three prosecutions were undertaken for adulteration. From Stalybridge 10 samples of food were submitted for analysis, and all were certified pure. From Cheadle and Gatley several samples of foods were sent, and all certified pure. For Macclesfield Borough the Analyst analysed 37 samples of food. One was found adulterated and the vendor thereof prosecuted.

Recreation Grounds.—There is very little to be reported under this heading. At Dukinfield, a Committee was appointed two years ago to negotiate for the purchase of land as recreation grounds, but up to the present their efforts have not been successful. However, the District Council having some land to spare, have given it to the public as a recreation ground. The land consists of 12,383 square yards, and is the upper part of the Market-ground. It has been enclosed. At Hazel Grove, in the Stockport Rural District, a plot of land has been set apart for a recreation ground, and is much appreciated by the young people. The Medical Officer of Health for the Borough of Crewe again asks that a play-ground (or more than one) may be provided for the children of the district.

Meteorological Results.—Four Medical Officers of Health furnish records on the meteorology of the year. It is remarkable that three of these records were taken at Bidston, Stalybridge, and Crewe, representing the north-eastern and north-western extremities of the County, and a point in the south about equidistant from the other two points of observation. The other record is from Macclesfield, which is almost exactly midway between Stalybridge and Crewe. The results are not quite comparable. However they serve to show that the mean temperature was 49.4 degrees F. at Bidston (near Wallasey), about 48 degrees at Stalybridge, about 47.1 degrees at Macclesfield, and about 46.8 degrees at Crewe. The difference in the rainfall is very noticeable. The total rainfall was as follows:—

Borough of Crewe	...	21.44	inches.
„ Macclesfield	...	34.13	„
„ Stalybridge	...	35.57	„
Bidston (near Wallasey)	...	26.63	„

Inspection of Canal Boats.—Power is given under the Canal Boats Acts, 1877 and 1884, to Sanitary Authorities to cause inspections to be made of canal boats, and no canal boat can be used as a dwelling unless registered. The regulations for registration, fixing the number of persons allowed, promoting cleanliness, and preventing infectious diseases in such boats are (as required) the Local Government Board's.

Judging by the Reports there are 19 Districts in which the provisions of these Acts are in force—The Urban Districts of Congleton, Macclesfield, Altrincham, Bollington, Dukinfield, Lymm, Marple, Middlewich, Nantwich, Northwich, Wallasey and Winsford, and the Rural Districts of Bucklow, Congleton, Macclesfield, Nantwich, Northwich, Runcorn and Wirral. The number of boats inspected is not stated as regards Bollington, Marple, Middlewich, Northwich, Winsford and Wirral. The number of boats inspected in all the other districts was 734, in 1896. In 64 instances, according to the Reports for 1896, some breach of the regulations was observed and the owners were required to conform to the regulations. One prosecution was instituted under the Canal Boats Acts, and a conviction obtained.

Interments.—The Medical Officer of Health for the Borough of Hyde advises that steps should be taken for closing the old burial grounds attached to places of worship. These are “well nigh full to their utmost capacity,” and the Borough has a large cemetery available for interments. An addition to the burial-ground of Ashton-upon-Mersey has been made, and the new land will be opened in the spring. The old churchyard, being full, has been closed. The needed cemetery for Bollington is not yet provided. The negotiations for providing a cemetery for Cheadle and Gatley are still in progress. At Knutsford negotiations for the purchase of land for a cemetery have been begun in connection with several sites. At Marple there is a scheme for laying out and planting the old and new portions of All Saints’ Churchyard.

FRANCIS VACHER,

County Medical Officer of Health.

June 25th, 1897.

Administrative County of Chester.

SUMMARY OF REPORTS

OF

District Medical Officers of Health,

FOR THE YEAR

1896.

SUMMARY OF REPORTS
OF
DISTRICT MEDICAL OFFICERS OF HEALTH
For the Year 1896.

CONGLETON.

Municipal Borough.

Medical Officer of Health—DR. P. M. DAVIDSON.

Population at Census, 1891—10744.

Estimated Population in middle of 1896—11389.

Area in Acres—2592.

Birth-rate per 1000 living—30.8.

Death-rate per 1000 living—18.9.

Death-rate from seven principal Zymotic Diseases—1.2.

Deaths under one year to 1000 births—122.

As during the ten years 1881-91 the population of this Borough decreased by 372, it has in recent Reports been estimated as stationary. There is, however, good reason for believing that the population has increased. From the date of the last Census the births have exceeded the deaths by 645; this number has therefore been added to the census population, making the estimated population, for the purposes of this Report, 11389.

In 1896, the number of births registered in the district was 351, the birth-rate being above the mean birth-rate of recent years. In 1896, the number of deaths registered in the district was 205, but to this number must be added 10 deaths of persons belonging to the Borough, which took place in the Workhouse at Arclid, making in all 215 deaths. The death-rate is a little below the mean death-rate of recent years. The proportion of deaths among infants is smaller than in recent years.

Zymotic Diseases.—The following cases of zymotic diseases came to the knowledge of the Medical Officer of Health:—132 scarlatina, 5 diphtheria, 2 typhoid fever, 11 measles, a large number of cases of whooping-cough and influenza and a few cases of diarrhoea. There were 5 deaths from scarlatina, 2 from diphtheria, 1 from typhoid fever, 1 from measles, 4 from whooping-cough, and 1 from diarrhoea. The principal zymotic diseases death-rate (1.2) was lower than in recent years. In addition to the deaths from the principal zymotic diseases, there were 6 deaths attributed to influenza.

Scarlatina became epidemic in the last quarter of 1895 and continued so until the end of the second quarter of 1896.

After this the cases became gradually less numerous, and by the end of the year there was no scarlatina. All the cases which came under the notice of the sanitary officials were visited, and isolated as far as that was possible at home, the infected houses being disinfected. It is, however, doubtful whether much good was done in this way, for there are good grounds for believing that a very large number of cases were never heard of, and a considerable number more were not heard of till long after they had contracted the disease and been mixing, in an infectious state, with other children at school and elsewhere.

Diphtheria.—This disease was mainly confined to the first quarter of the year. Although all the cases were investigated, in no instance was there any condition of house or locality to account for the occurrence of the case.

Typhoid Fever.—The houses in which the two cases of this disease appeared were found to be in bad sanitary condition. Previous investigations, when typhoid fever has occurred, have shown bad sanitary conditions, ever since the town was provided with good water. Anything like a general outbreak of the disease has been unknown since that time.

Measles was imported into the district on two occasions, but did not spread beyond the immediate neighbourhood of the first cases.

Whooping-cough became prevalent in July, and gradually increased until at the end of the year it attained the proportions of an epidemic.

Diarrhœa.—There were very few cases of this disease, and but one proved fatal. There was nothing in the shape of the usual outbreak of summer diarrhœa, which has often been severe and fatal.

Influenza.—During the last half of 1896 influenza was twice very prevalent, if not epidemic, and the mortality was considerable.

Infectious Diseases Notification.—The matter of the adoption of the Infectious Disease (Notification) Act has been again discussed. It was again decided not to adopt the Act, but this time by such a narrow majority, compared with former occasions, as to give some hope that another effort to obtain compulsory notification will be successful. The Medical Officer of Health points out that through not receiving early notice of cases which the adoption of the Act would have insured, much time, trouble and expense were almost entirely thrown away in connection with the recent epidemic of scarlatina.

Isolation Hospital provision, a matter presenting greater difficulties than compulsory notification of infectious cases, has also been debated, but nothing has yet been definitely settled.

Inspection and Sanitary Work.—The Medical Officer of Health visited the whole district several times during the year, and certifies that a large amount of sanitary work has been got through. The following particulars, taken from the Report furnished to the Medical Officer of Health by the Sanitary Inspector witnesses to this. Ninety-five infected houses were disinfected; 335 visits were made to infected houses. Twelve old streets, having a total length of 2,306 yards, were sewer'd, and 139 houses were re-drained and the drains trapped. Fifty houses (not previously supplied) were provided with town's water—reducing the number of houses still supplied from wells to 178. There were 967 sanitary inspections made and 547 sanitary notices served.

Removing and Deodorizing Excreta.—The method of treating night-soil with acidulated peat dust, begun in 1893, continues to give satisfaction. During the year 136 of the old privy-closets were converted into pail-closets, making the number of pail-closets in use at the end of the year, 912. The number of loads of night-soil removed was 5,102, and the entire quantity of peat-manure prepared and sold amounted to 350 tons.

Canal Boats.—Ninety canal boats' inspections were made, and three notices were served in respect of infringement of regulations.

CREWE.

Municipal Borough.

Medical Officer of Health—DR. HERBERT JONES.

Population at Census, 1891—32783.

Estimated Population in middle of 1896—38190.

Area in Acres—2193.

Birth-rate per 1000 living—31·4.

Death rate per 1000 living—14·9.

Death-rate from seven principal Zymotic Diseases—1·9.

Deaths under one year to 1000 births—137.

The Area of the Borough of Crewe when incorporated in 1877 was 1,336 acres. By Local Government Board Order, No. P. 770, which was confirmed by Local Government Board Provisional Orders Confirmation (No. 11) Act, 1892, and came into operation on November 9th, 1892, the limits of the Borough were extended to include parts of the civil parishes of Coppenhall Church, Shavington-cum-Gresty, and Wistaston. The total area of the extended Borough is 2,193 acres.

The area of the Wards is as follows:—

Central Ward	...	...	134 acres.
West	„	...	676 „
North	„	...	942 „
South	„	...	441 „

Altitude and Subsoil.—At Hightown the height above sea-level is 200 feet, at Nantwich Road it is 189 feet, at Market Hall it is 179 feet, in the valley it is 145 feet, and at the Sewage Farm 125 feet. A subsoil of stiff clay extends over nearly the whole of the Borough. Very exceptionally (in some instances only for a few superficial yards) there is a sandy subsoil.

Population.—It is estimated that there were 38,190 persons living in the Borough of Crewe at midsummer, 1896. The number is arrived at as follows:—

Houses on Rate-book	...	...	7866
Empty Houses	...	...	228
 Total Occupied Houses	...	...	7638
Persons per House (Census 1891)	...	...	5
 38190			

The population of the four Wards, in 1896, is estimated as follows:—

Central Ward	...	...	...	10305
West	„	...	...	9065
North	„	...	...	8975
South	„	...	...	9845

Houses and Ratable Value.—As showing the small ratable value of a large proportion of the houses in Crewe, the following statement is interesting. It refers to the houses on the Rate-books, March 25th, 1896.

154 houses rated under £5 per annum.

5905	„	„	at £5 and under £10 per annum.
1378	„	„	£10 „ £20 „
229	„	„	£20 „ £30 „
95	„	„	£30 „ £40 „
45	„	„	£40 „ £50 „
15	„	„	£50 „ £60 „
15	„	„	£60 „ £70 „
10	„	„	£70 „ £80 „
4	„	„	£80 „ £90 „
5	„	„	£90 „ £100 „
10	„	„	£100 „ £200 „
1 house	„	„	above £200.

7866

From the above it will be seen that 77 per cent. of the

houses in Crewe are rated under £10 per annum, and 94 per cent. under £20 per annum.

Births and Deaths.—In 1896 the number of births registered was 1,200 (626 males and 574 females), of which 4·1 per cent. were illegitimate. The birth-rate is 3·0 below the mean birth-rate in the ten years 1886-95. In 1896 the number of deaths registered (including 11 deaths of persons belonging to the district which took place in Nantwich Workhouse, and excluding 8 deaths in the district of persons not belonging thereto) was 571 (307 males and 264 females). The death-rate is 1·5 below the mean death-rate in the ten years 1886-95.

The monthly death-rate varied from 7·8 in September to 25·1 in December.

There were four deaths the causes of which were uncertified, *i.e.*, 0·7 per cent. of the whole number of deaths.

Still-births.—During 1896 the bodies of 65 still-born infants were brought to the cemetery for burial. The number brought for burial in the six years 1890-95 was 273—about 48 a year.

Infantile Mortality.—Of the 571 deaths registered, 165 were of infants under one year old, and 90 were of children between one year and five years old. The number of deaths under one year old is equal to 137 per 1,000 births. This is not a large proportion for an urban district. It is noteworthy how largely the infantile mortality in Crewe is dependent on the deaths from diarrhoea. In 1893 and 1895 diarrhoea was very fatal among young children, and in those years the infantile mortality was very high. In 1894 and 1896 the deaths from diarrhoea were much fewer in number, and the infantile mortality was correspondingly less. Of the 165 deaths of infants, in 1896, 63 were from lung diseases, 19 were from diarrhoea, 18 were from premature birth, 14 were from debility, 11 were from convulsions, 4 were from tabes mesenterica, 2 were from measles, and 1 was from whooping-cough.

Zymotic Diseases.—The number of cases of zymotic diseases which came to the knowledge of the Medical Officer of Health, during 1896, was 586, viz. :—2 small-pox, 131 measles, 377 scarlatina, 29 diphtheria, 9 whooping-cough, 22 diarrhoea, and 16 typhoid fever. The number of deaths from the seven principal zymotic diseases, during 1896, was 76, viz. :—9 measles, 18 scarlatina, 10 diphtheria, 8 whooping-cough, 22 diarrhoea, and 9 typhoid fever.

The zymotic death-rate, for 1896, is 0·5 below the mean zymotic death-rate in the years 1886-95.

The Infectious Disease (Notification) Act, 1889, was adopted in 1896, and came into operation on October 1st. Of the 586 cases of infectious or zymotic disease which came to the knowledge of the Medical Officer of Health, 430

occurred in the first three quarters of the year, and 156 in the last quarter, the period during which the above Act was in force.

Small-pox.—On March 29th, a woman was reported to be suffering from small-pox. The Small-pox Hospital was at once got in readiness, nurses engaged, and the patient removed. She had been vaccinated in childhood, but not re-vaccinated. She remained in hospital four weeks, and made a good recovery. The room she had occupied in her own house and its contents were disinfected with a solution of corrosive sublimate by means of the equifex sprayer, the walls and ceiling were white-washed, and the clothing, bedding, &c., were afterwards disinfected by means of the steam disinfecter. Every person who had been in contact with the patient during the 14 days prior to the attack, was re-vaccinated and kept under observation for a fortnight. The cost of the measures taken amounted to £40.

On October 5th, a notification was received of a case of small-pox, the patient (a man) having come from London during the stage of incubation. The practitioner who notified the case was averse to its being removed to hospital. The patient was accordingly isolated at home. He had been vaccinated in childhood, but not re-vaccinated. Two members of his family were re-vaccinated. He made a good recovery.

Measles was very prevalent during the second and third quarters of the year, and seriously affected the attendance of school children. Of the 9 deaths recorded, 5 were among children under two years of age, 3 of those who died were three years old, and 1 was four years old.

Scarlatina.—It may be remembered that owing to the prevalence of scarlatina the public elementary schools were closed by an order of the Town Council on November 22nd, 1895, for a period of six weeks. The Medical Officer of Health believes that when the schools re-opened on January 6th, 1896, the epidemic had practically died out. Within a week, however, of the children being brought together again there was a renewed outbreak, four schools being chiefly affected. The simultaneous sickening of several children pointed to the return to school of scholars in an infected condition. During January 63 cases came to the knowledge of the Authority (4 fatal), in February 40 cases (2 fatal), in March 38 cases (3 fatal), in April 42 cases, in May 17 cases (1 fatal), in June 31 cases (2 fatal), in July 3 cases (1 fatal), in August 11 cases (1 fatal), in September 29 cases (1 fatal), in October 61 cases (1 fatal), in November 14 cases (1 fatal), in December 28 cases (1 fatal). During the last three months as notification was then compulsory, the information given was more complete. The 104 cases notified under the Act occurred in 71 families, so that it may be assumed that about 33 persons were attacked owing to insufficient isolation of initial cases.

The death-rate in 1896 from this disease was 0.47 per 1000 living.

Diphtheria.—One death was recorded from this disease in May, and 2 deaths were recorded in September. During the last quarter of the year 25 cases were notified in 12 households, and 7 deaths occurred. An examination of the premises occupied by those affected was in every instance made, and in 9 of the houses unhealthy surroundings were found. At one house the D trap on which the sink waste-pipe discharged had been removed. Near two other houses sewer or drain gas was escaping from inlet gratings. In a fourth house was an untrapped cellar drain, communicating directly with the main sewer. The diphtheria death-rate in 1896 was 0.26 per 1000 living.

The Diagnosis of Diphtheria.—In December the Medical Officer of Health received permission from the Health Committee to submit material taken from the throats of persons suspected of having diphtheria to Professor Delépine, of the Owens College, Manchester, for bacteriological examination, and it is anticipated that much good will come from the verification or otherwise of diagnosis. The arrangement with Professor Delépine dates from January 1st, 1897.

The following circular letter, which was during December sent to every Medical Practitioner in Crewe, explains exactly what it is proposed to do, and the manner of doing it :—

“HEALTH DEPARTMENT,
MUNICIPAL OFFICES.

“DEAR SIR,

“I have pleasure in informing you that the Town Council have decided to give facilities to Medical Practitioners in the diagnosis of cases of diphtheria occurring within the Borough. That many cases of diphtheria —more especially those of a small degree of severity—are difficult to recognise is a common experience; such cases, if unrecognised, are liable to spread the disease, and again if they *are* recognised it is difficult to persuade patients that such apparently slight symptoms as may prevail can really require either isolation from other members of their family, or disinfection, or indeed that any precautionary preventive measures need be taken.

“Arrangements have been made with the Council of Owens College, Manchester, and with Professor Delépine, to make a bacteriological examination of material obtained from cases suspected to be suffering from diphtheria. The cost of this examination will be borne by the Corporation; and the notification fee of 2s. 6d. will be paid to the Practitioner notifying, even if the case notified is shown not to be one of diphtheria.

“If no bacteriological examination is requested, it will be presumed that the case notified admits of no doubt, and the necessary precautions as regards isolation and disinfection will be enforced.

“A number of tubes are kept at the Municipal Offices, each containing materials by means of which a Practitioner can obtain from a suspected case matter for transmission to Professor Delépine. The tubes are enclosed in a wooden case, on the outside of which are printed instructions for taking the matter for examination. A copy of these instructions is appended herewith. Professor Delépine wishes it to be understood that unless the particulars asked for are given no bacteriological examination will be made.

“When the Medical Attendant requires a tube he can either by telephone or by writing across the notification certificate request that it be sent to his patient's address, or to his own house. The messenger who delivers the tube will, if desired, wait to receive it back and send it forthwith to Manchester, or the Medical Attendant can himself transmit it. Professor Delépine will send his report to the Medical Officer of Health on the following day, and a copy will at once be forwarded to the Medical Attendant. In order that the diagnosis may not be delayed, the tube should reach Owens College by 3 p.m. on any one of the days Monday to Friday, and on Saturday by 1 p.m. No diagnosis will be given on Sunday.

“I beg to remain, dear Sir,

Sincerely yours,

HERBERT JONES,
Medical Officer of Health.

Whooping-cough.—There were many cases of this disease early in the year and one death was recorded in January. Again in the last four months of the year the disease was prevalent. There was 1 death from it in August, 1 in September, 1 in October, and 4 in December. The disease was still active after the close of the year. The whooping-cough death-rate in 1896, was 0.2 per 1000 living.

Typhoid Fever.—Isolated cases occurred during the whole year. There was 1 death in March, 2 in May, 2 in June, 2 in August, 1 in November and 1 in December. Nineteen cases were reported after October 1st, when notification became compulsory. Immediately a case is notified a covered bucket containing peat and a disinfectant is sent to the house indicated, with instructions to place all the patient's discharges in the bucket, which is removed and replaced by a fresh bucket daily. The contents of these buckets are taken to the sewage farm and burned in a small cremator at the pumping station. Printed instructions as to the nursing of typhoid patients are also sent to

every household where the disease is known to exist. The typhoid fever death-rate in 1896, was 0.23 per 1000 living.

Diarrhœa.—Of the 22 deaths registered from diarrhœa 19 were among infants under one year old. In 1895 deaths from infantile diarrhœa occurred from early in July till the end of September, and during this period the 1ft. and 4ft earth thermometers registered respectively, with only the slightest variations, 62 degrees and 58 degrees F. In 1896, however, the temperature of the earth at these two depths did not reach these points until the middle of July and only remained elevated till the end of August. It was during these six weeks that 18 of the deaths from infantile diarrhœa were registered. The diarrhœa death-rate, in 1896, was 0.57 per 1000 living.

This disease has always been prevalent in Crewe, and there is little doubt that one cause is the existence in the town of a large number of badly constructed cesspools, privies and midden-privies, the walls of which are uncemented brick-work, allowing excrement to soak into the surrounding ground. In many other houses the sanitary accommodation is scarcely less insanitary, it consists of a pail-privy, the pail of which (as no duplicate is provided) remains uncleansed year in and year out. Of course a pail should be properly cleansed each time it is emptied.

In one district, adjoining Henry Street, containing 271 houses, only 7 of which are provided with water-closets, the deaths from infantile diarrhœa have been in excess every summer. During the spring of 1896 a very careful inspection was made of these houses. There were found nearly fifty dilapidated cesspool privies within six feet of the back doors of the houses, and a large proportion of pail-closets in a very filthy condition. The pails and woodwork were well cleaned and sprayed by means of the equifex sprayer with solution of corrosive sublimate (1 in 1,000), and for six successive weeks each pail was charged after emptying with 7 lbs. of dried peat, to absorb and deodorise the excretal matter as received. Owing to the difficulty in obtaining the peat, this method of dealing with pail-closets could not be continued. It is noticeable that after these steps were taken to make this district a little more cleanly there were no deaths recorded within its limits from infantile diarrhœa, although in previous summers it had been a hotbed of the disease.

Phthisis.—The number of deaths from this disease (33) was lower than any on record in the Borough. Twenty of the deaths were among males and 13 among females. Sixteen were of persons between 25 and 45 years old. The phthisis death-rate, in 1896, was 0.86 per 1,000 living.

In an increasing number of cases the bedding, etc., as well as the houses occupied by consumptive patients have been disinfected. Circulars containing instructions have also been left at the houses, and efforts made to impress upon all

concerned that consumption is a distinctly infectious disease, and that measures should be taken to prevent its spread.

Influenza.—There is no record as to the extent of this disease, but it did not appear to be epidemic at any period. There was one death therefrom in May, and there were two deaths in December.

Pneumonia.—Of the 71 deaths from inflammation of the lungs, 40 were among children 5 years old. The pneumonia death-rate, in 1896, was 1.85 per 1,000 living.

There were 4 deaths in the L. & N.W.R. Co.'s Hospital. Two were from accidents occurring in the Company's Works, one was from being run over by an engine, and one from an accidental fall through a bridge. Of 5 deaths in the Cottage Hospital, one was from extensive burns.

Inquests.—There were 34 inquests held during 1896, of which 19 were upon males and 15 upon females. The mean annual number of inquests in the ten years 1886-95 was 27. Two of the deaths in respect of which inquests were held were ascribed to alcoholism.

Isolation Hospital for Small-pox.—This hospital was made use of for one patient during April under circumstances already referred to. After the patient's discharge, the house was disinfected with a solution of corrosive sublimate (1 to 1,000) by means of the equifex sprayer, all the walls and ceilings were lime-washed, and the bedding was passed through the steam disinfecter.

The New Hospital.—The building of this Hospital was begun in January, and should have been completed by the end of November. However, various causes (including a strike of joiners in the summer) conspired to retard the work, and it is hardly possible that the buildings can be ready for occupation before the beginning of autumn, 1897.

On April 1st the Medical Officer of Health presented a Report to the Hospital Committee, in which he pointed out the advantages to be gained by having the buildings lighted by electric light, and suggested that a furnace, of a type suitable to consume dry ashpit refuse, might be erected to supply the necessary steam for an engine, for the disinfecter and for the laundry. The committee recommended that the Corporation erect a refuse furnace for raising steam and also that the buildings be lit up by electric light, and tenders for the supply of the necessary plant were invited. On the basis of these tenders, an application was made to the Local Government Board, in October, for sanction to borrow £500 for electric lighting purposes, and £500 for erecting a refuse furnace. At the same time application was made for sanction to borrow an additional £1000 for the general buildings, necessitated principally by the altered position of the administrative block to

enable future extensions to be more advantageously made. Enquiries from those who have had electric light installations for some years, of about the same size as that proposed for the Hospital (100 16 c.p. lamps), showed that the probable annual cost of electric light over gas would be about £15. Steam being required for the laundry and disinfecter the cost of raising it would not be so great as if it were raised solely for electric lighting purposes. It was proposed also to use the electric plant for working four 18in. ventilating fans for extracting foul air from the wards through ducts connected with ceiling gratings.*

Disinfection.—Carbolic acid powder is freely used by the night-soil men, who are practically empowered to use an unlimited quantity. Seven tons were used in the course of the year. This disinfectant is also given gratuitously to those who come to the office for it; in this way 487 packets were distributed in 1896. The steam disinfecter has been used for the disinfection of bedding, clothing, &c., on 151 days. A new 2-wheel van, completely closed, was purchased during the year, and is to take the place of the old ambulance van hitherto used to carry infected clothing to the disinfecting station.

Adjoining districts have not taken advantage of the arrangement made with them in 1894; in only one instance have articles from outside the Borough been sent for disinfection.

There have been altogether 281 houses disinfected, the method being that described in the last Annual Report—applying a solution (1 in 1,000) of corrosive sublimate to the ceilings, walls, &c., by means of an equifex sprayer. The Medical Officer of Health has no reason to regret having adopted this means of disinfection in place of sulphur fumigation, though it is more costly, as in spraying two men are required to carry out the work.

Prevention of the Spread of Infection.—Beside the disinfection of infected houses and clothing, the prompt removal of infective material in typhoid fever cases, &c., great care is taken to prevent children from infected households attending school. Each head teacher is supplied with a list giving the names and addresses of children exposed to infection, belonging to the school, and a fresh list is supplied as often as necessary, corrected up to date. The teacher is requested not to admit any child to school as long as the name remains on the list. A

* On January 8th, 1897, a Public Inquiry was held, at Crewe, by Dr. S. W. Wharton, on behalf of the Local Government Board. Subsequently intimation was received that the Board sanctioned an additional loan of £1000 for general purposes, but refused to sanction a loan of £500 for erecting a refuse furnace. They are also prepared to sanction a loan for electric lighting purposes, but advise the Corporation to delay putting in the installation until there is a town's supply of electric light.

list of infected houses is also supplied to the librarian of the Mechanics' Institute.

Notification of Sickness by Friendly Societies.—

This system of notification has been in force in the Borough for about two years and a half, and by its instrumentality not a few insanitary conditions have been rectified. The Medical Officer of Health acknowledges his indebtedness to the Secretaries who have supplied him with weekly lists. The experience at Crewe tends to show that much valuable information would be obtained by the local Authority if the Secretaries of all registered Friendly Societies were placed under an obligation to forward their sick returns to the Medical Officers of Health for their districts. Even if payment were made, say at the rate of three pence for every return sent in, the annual cost would not be great—in Crewe it would not reach £10, yet in Crewe probably a larger proportion of the population are Club-members than in other towns.

Examination of Houses.—Several householders have availed themselves of the offer made in 1893 to examine any house in the town as to its sanitary condition free of charge. Many defects have been thus discovered and rectified. In one house, for example, in which the occupants were constantly suffering from sore throat or being "run down," the waste-pipes were found entering an ill-ventilated soil-pipe, a gully trap in the cellar admitted sewer-gas into the house, the rain-pipes discharged into the foundations, and the drain connecting the soil-pipe with the sewer was "laid so much after the plan of a switch-back that an elongated cesspool was the result." In another house, where one of the occupants was always suffering more or less *malaise*, the pipes of the cellar drain were badly connected, and some of the collars broken, so that there was direct communication between the sewer and the house.

House-to-House Inspection.—A complete house-to-house inspection was not possible in 1896. However, every part of the town was visited at one time or other, and certain districts received special attention. Regular systematic inspection is not practicable unless the staff be increased.

Bakehouses.—There are 23 bakehouses in the Borough. At five of these the ovens are stoked from behind; in the others sufficiency of coal for daily use is brought in each morning, and a great deal of unnecessary dust and dirt is thereby created. There are no underground bakehouses.

Cow-Sheds.—There are 59 in the Borough, 30 of which are in the North Ward and only 4 in the Central Ward. Only a very few even approach the perfection one is entitled to look for in buildings from which is sent so important an article of food as milk.

Dairies and Milk-Shops.—There are 45 in the Borough, and in not one are milk and dairy produce exclusively sold. Combining the business of a milk-seller with that of a green-grocer, chandler or grocer is not at all desirable. It is extremely difficult to obtain compliance in such cases with the regulation that the ceiling and interior walls of every milk-shop be thoroughly cleansed twice a year.

Regulations under the Dairies, Cow-sheds and Milk-shops Order were made by the Town Council in 1892. During 1896 public notice was given by advertisement and public placard of the necessity for registration of all cow-keepers, dairymen and milk-sellers.

Common Lodging-houses.—There are 6 registered Common Lodging-houses in the Borough, but one (registered for 10 beds) is closed. The remaining 5 contain in the aggregate 22 rooms, and can accommodate 104 persons. As regards 3 houses the Medical Officer has had great difficulty in obtaining compliance with the bye-laws. In August the keepers of these houses appeared before the Borough Justices, and for contravening the bye-laws were fined £1 2s. 6d. and £3 16s. 0d. costs. Since then 2 of these houses have passed into other hands, and a slight improvement has been observed. The Medical Officer of Health advocates the establishment of a Municipal Lodging-house, and believes that, with proper management, it would be self-supporting.

Houses Let in Lodgings—The Model Bye-Laws relating to houses let in lodgings were adopted and came into force in 1877.

Slaughter-houses.—There are 13 registered slaughter-houses in the Borough. Nearly all are too small, and ill-adapted for the purpose. Most of the butchers endeavour to carry out the requirements of the bye-laws ; but have to be constantly reminded of their duties.

Public Slaughter-houses Closed.—The slaughter-houses at the Cattle Market have been closed. The butchers so rarely used them that the Lessee of the Market found more profitable employment for the space occupied.

No diseased meat or unsound food was seized during the year.

Factories and Workshops.—There are 102 factories and workshops in the Borough. These have been visited during the year. In 3 cases there were not separate conveniences for the sexes, and these have been since provided. Some improvements have been made in the closet-accommodation at the Railway Works.

Adoptive Acts.—The Infectious Disease (Prevention) Act, 1890, came into operation in Crewe on January 1st, 1891.

The Public Health Acts Amendment Act, 1890, came into operation in Crewe on February 1st, 1891.

Water-supply.—The Medical Officer of Health has made periodical analyses of the water supplied to the town from the Artesian Wells at Whitmore, by the L. & N.W. Ry. Co., and found it of uniform purity, varying however, in hardness.

School Accommodation.—The public school accommodation in the Borough suffices for 7,723 scholars, an increase of 1,007 upon the accommodation in 1895. The accommodation is apportioned to the Wards as follows :—

					Per cent. of population.
Central Ward	...	...	2.847	..	28
West	„	..	1,743	...	20
North	„	...	1,229	...	13
South	„	...	1,904	...	20

The Teachers co-operate with the Authority for the diminution of disease in schools. Head Teachers are supplied with certificate forms to be filled in and sent to the Authority when any scholar is suffering from measles, mumps, whooping-cough or chicken-pox. The Medical Officer of Health then certifies for the non-attendance of such scholar at school, which certificate is of course recognised by the Inspector of the Education Department.

A Play-ground needed.—In previous Annual Reports the Medical Officer of Health has drawn attention to the desirability of providing a recreation ground (or more than one) for children. The need is not less now that the area of the town is larger and the population increased.

Ventilation of Sewers.—In 1896 there were not so many complaints as in former years of foul smells from street-level man-holes or gullies. All the man-holes in the town which had catchpit bottoms (there were nearly 300) have been altered so that there is a continuous flow of sewage along the sewers. In several instances smells arose from untrapped gullies, and trapping these put an end to the nuisance.

Re-construction of Privies and Ashpits.—During the year 2 fixed receptacles, 135 cesspools, 7 pail-closets, and 90 privy-middens were re-constructed and converted into 122 wash-down water-closets, 83 waste-water closets, and 29 pail-closets. There are a large number of cesspool closets being re-constructed, but when the work is completed there will still be about 300 in various parts of the town, and as they get sufficiently dilapidated they should be replaced by water-closets. Besides these 300 cesspools there are 200 fixed receptacles, about 2,000 privy-middens and 2,500 pail-closets, and there can be no question that in a town, growing as rapidly as Crewe, the retention of this conservancy system will each year increase the difficulties of coping with disease.

Where main sewers have been laid down, and out-fall sewerage works provided, at a great cost, as in this Borough, it is scarcely possible to advocate any other system than water-carriage. Under the present conservancy method, although sewers are ready provided under the streets to convey sewage to the sewage farm, about £1,500 yearly is spent in collecting by night and carting excreta, &c., over the streets to the no small annoyance of the inhabitants, and at considerable risk to their health. It is true that if ordinary water-closets were universally used the cost of water would nearly come up to the sum named (£1,500) but there are many groups of houses which could be provided with closets of a type suitable for flushing *en bloc* with waste water or with fresh water.

Removal of Ashes and Refuse.—In 1896, the number of ashpits emptied was 17,788, the number of privy-pails emptied was 110,996, and the number of ashbins emptied was 65,170. The number of loads of ashes, &c. (removed in the day time) was 6,639, and the number of loads of nightsoil, &c. (removed during the night) was 4,769—at a total cost of £2,143 0s. 10d. In 1894 the total number of loads removed was 9,863, at a cost of 4s. $5\frac{1}{4}$ d. per load; in 1895 the total number of loads removed was 10,376, at a cost of 4s. $2\frac{1}{2}$ d. per load; and in 1896 the total number of loads removed was 11,408, at a cost of 3s. $11\frac{1}{4}$ d. Thus, although the amount of work done increases yearly, the cost per load decreases.

Towards the close of 1896 a fortnightly emptying of all ashpits and ashbins was inaugurated.

Abatement of Nuisances.—During 1896 there were 101 statutory notices served upon property owners for the abatement of nuisances. Of these 88 were under section 94 of the Public Health Act, 11 were under section 49, and 2 were under section 47 of the same Act. Those under section 94 related very largely to nuisances arising from improper or defective traps. There are so many different forms of traps it is difficult to say which is best. There is however no difference of opinion as to which are the worst traps. Of these three may be named—the bell trap, the D trap, and the trap with brick sides allowing the contents to soak into the surrounding ground. Such traps should never be put into new buildings or allowed to remain in old ones. The notices under section 49 required the removal of accumulations of manure within 24 hours.

The receptacles for manure provided at many of the stables in the town are not constructed in accordance with the bye-laws, and the ground around them is polluted with liquid manure. In a few instances, in 1896, receptacles complained of were amended, but many still require attention.

The Sewage Farm (260 acres in area) was laid down in 1872 at a capital expenditure of £47,000. The whole area has a subsoil of stiff clay. About 60 acres are broken up yearly for

cereal crops, 15 acres are planted with willows, and upon the remainder is grown Italian rye grass, four and sometimes five crops being grown yearly. A large quantity of the fresh cut grass is sold in the town, and a still larger quantity is made into hay. There are usually about 50 head of cattle on the farm fattening, but no milch cows are kept.

The sewage finds its way by gravitation to the lowest portion of the farm along two main outfall sewers. The northern one is capable of taking 14,000,000 gallons in 24 hours, and the southern one has a like capacity as far as the Gas Works in Victoria Avenue, but beyond that point is only equal to 10,000,000 gallons in 24 hours. The sewage is pumped (untreated either by subsidence or precipitation) upon the land, and is delivered by elevated and ground-level carriers at whatever point is desired. The principal pump is worked by a beam engine, and is capable of lifting 100,000 gallons per hour. There are four subsidiary Tangye pumps, with a lifting capacity equal to 80,000 gallons per hour, which are only used as necessity arises.

After passing over the land the effluents flow into two streams, the North Brook or South Brook, both of which ultimately join the River Weaver. The Medical Officer of Health thinks that the character of the effluents themselves can rarely be complained of, and that "the occasional fouling of the North Brook is entirely due to the overflow." Care should, therefore, be taken to reduce this overflow to a minimum. In order to do this, a precise record should be kept of all occasions when there is an overflow--preferably by means of an automatic register. The proposal of the Farm Manager to lay down a filter-bed of brick ballast (burnt clay) near the North Brook is approved of, but of course such filter-beds must be of sufficient capacity.

On the Southern portion of the farm, for three years, part of a sand-pit was used as a "tip" for dry ashpit refuse, and early in 1896 the farm manager converted this into a filter-bed with remarkable success. A stream of sewage, straight from the pumping-station enters at the top of the ash-heap, through various openings, and comes out 40 or 50 ft. lower down as colourless and brilliant as a mountain spring.

Rather more than a million gallons of sewage are dealt with on the farm daily, but the water supply of the town is only about one-third of this amount. It is noted also that the rainfall has very little effect upon the amount of sewage at the outfalls. For instance, in comparing the month ending April 4th with the month ending December 12th, the amount of sewage received at the pumping-station in the latter month was nearly 5,000,000 gallons more than in the former (necessitating 50 hours more pumping), yet the amount of rain in each month was almost exactly the same, and the amount of water passed through the Corporation meters was the same within 500,000

gallons. The cause of this might, with advantage, be investigated.

The steam-supply to the engine at the pumping-station is produced by two boilers of Cornish type each of which is 6 ft. in diameter and 24 ft. long, with furnace flue $35\frac{1}{2}$ in. in diameter, fitted with 5 Galloway circulating tubes in each flue. Only one boiler is used at a time, each on alternate months. In 1894, steam blowers were fitted to one of the boilers, with a view to burning dry ash-pit refuse in lieu of a portion of the slack used for firing. After a short time this was found to be impracticable, and the destruction of dry ashes in the boiler furnaces was abandoned until the early part of 1896, when (in conjunction with arrangements made for treating crude night soil with acidulated screened ashes) it was found possible to burn the coarser portion of the household refuse, and thus effect a saving in coal.

The Mixing of Nightsoil and Acidulated Ashes.—

In the last Annual Report was a reference to the experiments made in mixing crude nightsoil with fine ashes and sulphuric acid. These were sufficiently successful to warrant the Farm Committee in carrying out the advice of their Manager to erect covered mixing sheds and a mechanical screen, worked from the engine-house. This plant has now been working for some time. The dry ashes are brought from the town in covered carts and deposited under cover near the screen, on which they are thrown by hand. The screen is a "two-decker," and as it moves the broken crockery, glass, tins, &c., are thrown off the top screen to a heap, from whence they are removed, as occasion arises, to form excellent bottom ballast for the farm roads. The lower screen catches the combustible matter (chiefly cinders), which is shot straight into the stoke-hole and used to raise the steam. There is left only the fine ash under the screen, which is wheeled to another part of the shed, and spread on the iron plates covering a flue leading from a small furnace to the boiler chimney. This small furnace answers the double purpose of burning up paper and large articles which cannot be conveniently put in the stoke-hole, and supplying heat to the flues over which the fine ashes are spread. In this furnace is also burned the contents of the excreta pails from cases of typhoid fever in the town. When the fine ashes spread out are fairly dry they are sprinkled over, from a leaden watering-can, with commercial sulphuric acid, to the extent of about 4 per cent. by weight. After a few days the acidulated ashes are wheeled into the mixing-shed, about 80 yards distant, and thrown on the top of the crude nightsoil which has been tipped there during the previous night. But little mixing is required, and the whole mass soon becomes in appearance very like ordinary soil. The mixing-shed is divided down its entire length by a dwarf wall, so that when one side is nearly full of the manure it can be thrown over to

the empty side, ready for carting away—the tossing over the low wall from one side to the other constituting the final mixing.

From an analysis which has been made the manure is found to contain 26 per cent. of organic matter (nitrogen 0.9 per cent.), and phosphate of lime 1.6 per cent. The reports from the farmers who, in 1895, used the manure made in the open air, and consequently containing a superabundance of moisture, were sufficiently satisfactory ; and there is no reason to doubt that the manure now made will be still more effective.

Disposal of Fish Offal, &c.—Adjoining the mixing-shed, two small concrete tanks have been erected, into which all the fish offal, &c., from the town is placed. A large quantity of sulphuric acid is added, and at the end of eight or ten months the mixture is taken out and put on the land.

Meteorology.—The following table shows the results of observations made by Mr. George Latimer, Curator of the Queen's Park, Crewe.

1896.	Rainfall in Inches.	Number of days in which rain fell.	Mean Temperature.			
			Maxi- mum in Shade.	Mini- mum in Shade.	1 foot below ground.	4 feet below ground.
January ...	1.40	11	44.2	32.8	40.6	43.9
February	0.75	6	46.5	31.4	40.7	43.3
March ...	2.80	21	51.0	34.3	43.2	43.6
April ...	0.80	11	56.8	36.9	46.4	45.6
May ...	0.48	5	64.0	38.3	52.5	46.0
June ...	1.81	10	73.7	43.6	57.4	53.9
July ...	1.70	12	73.3	48.2	60.0	58.6
August ...	2.58	14	66.8	46.9	58.5	58.0
September	2.42	22	62.6	45.5	56.0	56.6
October ...	2.70	18	51.5	34.4	47.5	52.6
November ...	1.30	5	43.3	28.6	40.1	46.2
December ...	2.70	18	39.9	28.5	38.6	43.6

The entire rainfall of 1896, at Crewe, was therefore 21.44 inches. In 1894 and 1895 the Crewe rainfall was respectively 19.99 inches and 18.29 inches.

The record as to wind shows how very little the E. and N. E. wind prevailed. In March, April and June on no one day was there an E. wind ; and in January, June, August and October was there no N.E. wind.

Acknowledgments.—The Medical Officer of Health concludes with thanks to the Chairman and Members of the

Health Committee, and to the late Chairman, for the consideration which they have at all times shown him ; and to Mr. Urquhart, the Sanitary Inspector, for the energy he has displayed in carrying on the work of the department during the year.

HYDE.

Municipal Borough.

Medical Officer of Health—DR. G. W. SIDEBOOTHAM.

Population at Census, 1891—30670.

Estimated population in middle of 1896—31952.

Area in Acres—3074.

Birth-rate per 1000 living—30·0.

Death-rate per 1000 living—20·3.

Death-rate from seven principal Zymotic Diseases—1·2.

Deaths under one year to 1000 births—195.

The constituent parts of this District are as follows :—

	Area in Acres.	Population at Census.
Hyde (including Knott Fold and part of Gee Cross) ...	897	20354
Part of Werneth (including part of Gee Cross)	662	1575
Godley	645	1408
Newton	870	7333

In 1896, the number of births registered was 960, and the number of deaths registered (excluding a death in the Infectious Hospital of a patient from Droylesden) was 651. The birth-rate was 0·4 below the mean birth-rate in 1892-95, and the death-rate was 0·7 below the mean death-rate in 1892-95. Of the deaths, 188 were of infants under a year old, that is almost one-fifth of those born died before completing their first year.

The 7 principal zymotic diseases account for 39 deaths, viz. :—2 scarlatina, 3 diphtheria, 8 croup, 5 typhoid fever, 8 measles, 4 whooping-cough, and 9 diarrhoea. The zymotic death-rate (1·2) compares favourably with the mean zymotic death-rate in 1892-95 which was 2·2.

Infant Mortality.—The mortality of infants being equal to 195 per 1000 births in 1896, and being equal to 201 per 1000 births in the four years 1892-95, warrants the Medical Officer of Health reverting to this subject, though it was fully discussed in his last Annual Report. He recommends mothers to study the management of infants, and suggests that the various nurses in the town should be provided by the Corporation with copies of a little pamphlet on this topic for distribution to suitable persons. His second recommendation is that parents, instead of putting their infants into burial clubs, should, on the

birth of an infant insure the life of one of the parents under an endowment policy, payable either at death or on attaining a certain age. There is of course nothing new in this plan, but it is not one adopted by the poor.

Infectious Diseases Notified.—Under the Infectious Disease (Notification) Act, which has been in force in the Borough since 1890, 225 cases were reported in 1896, viz.:—117 scarlatina, 23 diphtheria, 9 membranous croup, 29 typhoid fever, 5 puerperal fever, and 42 erysipelas. Of these, 113 were removed to Hospital, viz.:—104 scarlatina, 7 diphtheria, and 2 typhoid fever.

Scarlatina.—The widespread epidemic of scarlatina, which was so difficult to cope with in 1895, had not expended itself in the early months of 1896. Indeed during the whole year cases occurred, though the greatest care was taken to remove every case to Hospital when practicable, and to disinfect as thoroughly as possible every house in which a case appeared. The Medical Officer of Health thinks that many mild cases were unreported, through not being seen by Medical Practitioners. Such cases were now and then discovered in the peeling stage. He is of opinion also that disinfection will never be quite successful till he is able to have all persons who have been in contact with patients thoroughly disinfected at the Hospital during the time their houses are being disinfected.

By April 12th there were grounds for believing that the disease had ceased to prevail. For about a fortnight no case had been notified. However on the date named a case was reported in High Street, Flowery Field. On investigation it appeared that the infection was from a child in the same street, who was notified as having scarlatina on February 29th. The peeling had finished, and the Practitioner in attendance had pronounced the child free from infection. The Medical Officer of Health examined the child on April 17th, when there was distinct peeling; and he concludes that it was probably one of those cases which sometimes occur in which the process of peeling recommences after having apparently finished. The parents refused to let the child go to the Hospital for the remainder of its convalescence.

The Medical Officer of Health is in favour, as long as there is room, of removing every case of scarlatina to Hospital. Among many reasons for urging this is the fact that the treatment in Hospital includes frequent baths, which often cannot be obtained at home. He does not believe that receiving patients from neighbouring districts into Hospital tended to spread infection. Indeed the district of Gee Cross, in which the Hospital is situated, and through which all patients going to Hospital have to pass, is more free from infectious disease than any other part of the Borough. There is also this reason why Hyde should help neighbouring districts to exterminate infectious disease—

people in Hyde are occasionally infected from such districts. For instance, a child notified as having scarlatina in Francis Street on April 17th, caught the disease while attending school in an adjoining district.

As 104 of the 117 cases of scarlatina notified were removed, 88.8 per cent. of the cases known to the Authority were isolated in Hospital. Of the 13 patients treated at home one died, and of the 104 treated in Hospital one died.

Diphtheria and Croup.—Whereas there were 23 cases notified as diphtheria and 9 as membranous croup, there were 3 deaths ascribed to diphtheria and 8 ascribed to membranous croup. As in previous years, the two diseases may be considered under one heading. Of the 32 cases notified, 7 were removed to Hospital, of which 3 terminated fatally. Of the 25 cases treated at home, 8 terminated fatally. Thus of those attacked with this disease, 34 per cent. died.

As diphtheria is often difficult to detect in the early stage and in mild cases, and as mild cases are foci of infection in public elementary schools, the Medical Officer of Health is of opinion that it is desirable that there should be a periodical inspection of schools with a view to ascertain if any of the pupils are suffering from sore throat, and if any be found so suffering (especially during the existence of diphtheria in the district) and there is any doubt as to the nature of the malady, throat secretions from the case or cases should be bacteriologically examined and reported upon.

Typhoid Fever.—As already stated, 29 cases of this disease were notified, of which 5 ended fatally. There was one death in Hyde township, one in Godley, and there were 3 in Newton. Two cases which were reported from the centre of the town were of special interest. In one, the skin of the patient was peeling so much that he was sent into hospital as a case of scarlatina; but after careful observation, for a short time, the characteristic symptoms of typhoid fever unquestionably showed themselves. The second case was interesting, as it was difficult to assign any other cause for it than that the patient had the disease communicated to him by eating sewage-polluted oysters. The Medical Officer of Health suggests the expediency of all local Authorities joining in requesting the Local Government Board to make stringent regulations for the management of oyster beds, so as to minimise as far as possible the risk of typhoid fever being conveyed thereby.

Puerperal Fever.—In 1896, the 5 cases notified terminated in recovery. In 1895, 5 cases were reported, and all terminated in death. The Medical Officer of Health presses on the attention of all whom it may concern the absolute necessity of full precautions of a sanitary aseptic nature in the treatment of all cases of parturition. Although no deaths took place from

puerperal fever in 1896, six women perished as a result of parturition.

Measles was again very prevalent towards the end of the year. The 8 fatal cases were all (as is usual) complicated with lung disease. As the people cannot be taught to fear this disease it spreads rapidly, and is very fatal.

Diarrhoea was the recorded cause of 9 deaths, 8 of those who died being young children. This is an exceptionally low diarrhoea mortality for the Borough. In the four years, 1892-95, the mean mortality from diarrhoea was 29.5.

Influenza.—From time to time isolated cases of influenza occurred, but no death was registered as caused by it.

Acute Lung Diseases.—The number of deaths from bronchitis or pneumonia in 1896 was 152. This is equal to a death-rate of 4.7 per 1000 living—a somewhat high mortality. Of the 152 deaths 65 were of children under 5 years old.

Phthisis.—The number of deaths from this disease was 45. This is equal to a death-rate of 1.4 per 1000 living. The annual death-rate from phthisis in the Borough has been higher than this in recent years. The Medical Officer of Health recommends that a copy of the County Council Memorandum on "Precautions against the Infection of Phthisis or Consumption" should be given to every person known to be suffering from this complaint.

Death from "Natural Causes."—A certain number of deaths are registered year after year as due to "natural causes," all of course deaths the causes of which were inquired into at a Coroner's Court. There were 5 deaths thus registered in 1896. "In making Statistical tables for Public Health Reports," writes the Medical Officer of Health, "a difficulty arises in the classification of the findings of the Coroner's Court in cases where no violence is suspected. The usual verdict of 'natural causes' is of absolutely no value whatever for statistical purposes, and even when a guess at the cause of death is made without a post-mortem examination or scientific medical evidence, the result is hardly any better. How, for instance, is a Coroner's Jury, in the absence of any medical help, to distinguish (by the mere momentary inspection of the dead body of an infant) between convulsions and accidental suffocation, or an overdose of soothing syrup, or other causes too numerous to mention? All this leads to the conclusion that in every case where no medical man has been in attendance before death, a post-mortem examination should certainly be made, and the results stated in evidence, if anything like a satisfactory conclusion is to be arrived at."

Isolation Hospital.—This Institution was in full work during 1896, though not crowded as it was in 1895. In 1893

there were 112 cases treated in Hospital, in 1894 there were also 112 cases, in 1895 there were 312 cases, in 1896, there were 133 cases.

Particulars of the cases treated are given in the following table :—

1896.	Cases Received.				Deaths.			
	Scarlatina.	Diphtheria.	Typhoid Fever.	Total.	Scarlatina.	Diphtheria.	Typhoid Fever.	Total.
Borough of Hyde	104	7	2	113	1	3	...	4
Bredbury and Romiley	3	...	...	3	...	...	...	...
Handforth .....	...	...	1	1	...	...	...	...
Hazel Grove	1	...	...	1	...	...	...	...
Marple	3	...	...	3	...	...	...	...
Denton	2	...	2	4	...	...	...	...
Droylesden	2	...	...	2	1	...	...	1
Heaton Chapel	1	...	...	1	...	...	...	...
Heaton Mersey	5	...	...	5	...	...	...	...
Total	121	7	5	133	2	3	...	5

Since the Hospital was opened 835 cases have been treated there, and the deaths have only numbered 35.

Although the Hospital has done much good work, its usefulness would be greatly increased if there were accommodation for other diseases. There should be a pair of wards for one other disease at least, and also a ward for the reception of persons suffering from doubtful illness until its real nature can be decided. A laundry and discharging room are also much required.

A Covered Van needed.—As has been pointed out in a previous report, a covered van should be provided for removing infected clothing, &c., either to the destructor or to the disinfecting house at the hospital.

Disinfection.—The Medical Officer of Health recommends that an improved way of disinfecting premises should be adopted. Instead of burning sulphur in infected rooms, he suggests that the rooms should be cleansed with a coloured solution of corrosive sublimate.

Bakehouses.—These are duly inspected. As regards two of them remarks are made. Mr. Hackney's bakery in Stockport Road has been much improved, the drainage having been so altered that the premises now conform to the regulations. As

for the Cake Factory in Townsend Street, the drainage needs overhauling, two gullies inside should be removed outside, the closet (choked and without a good supply of water) needs to be put in order, the sink waste-pipe needs disconnecting, there is a large quantity of refuse collected at the back, pigs are kept on the premises, and the fumes from the ignition pipe of the gas-engine escape into the room and tend to produce headaches among the workpeople.

Offensive Trades.—The tripe-dressing establishments in various parts of the town continue to be conducted satisfactorily. The knacker's yard and bone-boiling house in Raglan Street referred to in the Report for 1895, continue to be a very great nuisance. Several applications made, in 1896, for the renewal of the license to these premises were refused.

Houses Unfit for Habitation.—Fernaley Court, Fernaley Street, was stated by the Medical Officer of Health, in his Report for 1895, to be "in so unsatisfactory a state that it is unfit for human habitation, and cannot possibly be made fit." It appears the houses in this court have not been closed for it is now again stated, "these houses should be closed at once as quite unfit for habitation, and as being incapable of being made so."

As regards "a very small and dark house surrounded by privies and ash-pits full to overflowing," in Bardsley Court, the report is that "it is quite unfit for human habitation." It might be opened up and formed into a part of the house in the front street behind which it stands.

Houses off Stockport road, opposite the "Ring o' Bells," Meadow Street, front and back, and Eyre Court, should be converted into double houses by making doorways in back to back walls, or (where this is not possible) closed.

Single houses at the back of Stone Pit, Gee Cross, are practically cellar-dwellings, and unfit for habitation. They might be so altered as to fit them for small workshops.

The occupation of houses now empty in Treacle Hill and Perrin Court, Gee Cross, should be permanently forbidden.

Houses in Back Spring Street should be closed at once.

An objectionable Lodging House.—There is a common lodging house in Charles Street, which has been licensed for many years, yet the Medical Officer of Health does not know a more unsuitable place for a registered lodging-house. All along the street the yard space is quite inadequate, and the privies are too near the houses.

Suggestions as to Sanitary Work.—In conclusion, the Medical Officer notes that many midden-privies still exist in the Borough and should be got rid of; that many of the sewers still need proper ventilation shafts; and that many of the closets in the cotton-factories require to be cut off from the workrooms by cross-ventilated lobbies.

Old Burial-grounds.—Now that the cemetery is available for interments, the Medical Officer of Health thinks the time has come for closing the burial grounds attached to places of worship. He believes these grounds are “well nigh full to their utmost capacity.”

MACCLESFIELD.

Municipal Borough.

Medical Officer of Health—DR. W. R. ETCHES.

Population at Census, 1891—36009.

Estimated Population in middle of 1896—36009.

Area in Acres—3215.

Birth-rate per 1000 living—26.7.

Death-rate per 1000 living—18.4

Death-rate from seven principal Zymotic Diseases—3.3.

Deaths under one year to 1000 births—155.

The Urban District includes the whole of the Registration sub-districts of East and West Macclesfield, part of Sutton and part of Hurdsfield. The area and population at the Census of these localities were as follows:—

		Area in Acres.		Population at Census.
East Macclesfield	...	874	...	9813
West Macclesfield	...	1706	...	17854
Part of Sutton	...	361	...	5060
Part of Hurdsfield	...	274	...	3282

Since July 1st, 1895, the Hurdsfield part of the district has ceased to be separate, it having been joined to East Macclesfield. In the Annual Report for 1895, the figures relating to East Macclesfield and Hurdsfield were kept separate until the end of the year. Hitherto, in comparing the death records and infectious disease records in different parts of the Borough, Hurdsfield has uniformly taken the best position and East Macclesfield generally the worst. Combining Hurdsfield with East Macclesfield will therefore make the statistics for the latter appear more satisfactory.

Altitude and Subsoil.—The elevation varies between four and five hundred feet above sea level. The nature of the subsoil is variable. To the W. and N. W. sand and gravel (lying on boulder clay) alternate, the sand predominating. In the centre of the town are from two to five feet of coarse gravel on firm boulder clay. To the E. brick clay on sand varies with rough gravel, and to the S. boulder clay predominates. The substratum, at a depth of from 50 to 170 feet, is new red sandstone.

Population.—The population at the Census, 1891, was 1,505 less than the population at the Census 1881. According to the ordinary methods of estimating population, one might assume that this rate of decrease was still going on, and calculate accordingly. However as this decrease appears to have been due to the emigration to America during 1881-91, which has fallen to a tithe of what it was, the population may safely be considered as stationary. The number of empty houses at the end of March was 432, and at the time of the Census there were 913 empty houses. Since the Census 92 new houses have been built, and about 54 have either been demolished or converted into workshops, store places, &c. Allowing for these, there are now 8,814 inhabited houses in the Borough as against 8,295 at the date of the Census, when the number of persons per house was 4.34. If there were the same number of persons to a house now the population would be 38,076, but there is reason to believe the number per house has decreased and that this is partly due to there being fewer houses occupied by two or more families.

The number of children on the school registers during the year was 4,504, less by 52 than the number in 1895. This is fully accounted for by the exceptional mortality among children of school-age during 1896. If the proportion of children at school-age to the population were the same as at the date of the Census, the present population would be 35,121. Thus while some considerations support an increased estimate of the population, the school register appears to indicate that the population has somewhat decreased.

Births and Deaths.—In 1896, the number of births was 964. This is equal to a birth-rate of 26.7, which corresponds closely to the mean birth-rate in the ten years 1886-95. In 1896, the number of deaths registered (excluding 67 deaths of persons not belonging to the Borough) was 665. This is equal to a death-rate of 18.4, which is 1.8 below the mean death-rate in the ten years 1886-95.

Infant Mortality.—From the following table, showing the number of deaths of infants under one year old to every 1,000 births in the sub-divisions of the Borough, and in the whole of England and Wales, it will be seen that during the ten years 1886-95 the infant mortality of Macclesfield has averaged high. In 1896 this mortality was not markedly in excess.

DEATHS OF INFANTS UNDER ONE YEAR TO EACH 1000 BIRTHS.

DISTRICTS.	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	Average for 10 years.	1896
West Macclesfield ... (excluding Public Institutions).	186	184	118	180	143	136	192	170	110	210	162	138
East Macclesfield ...	233	151	171	265	219	161	215	225	137	210	199	180
Hurdsfield ..	124	192	87	169	160	127	177	153	156	170	141	
Sutton ...	153	150	148	212	124	108	235	131	126	212	170	148
Cheshire Borough ...	194	170	135	220	172	130	203	190	134	217	166	155
England and Wales ...	149	145	136	144	151	149	148	159	137	161	147	148

East Macclesfield, it will be seen, has still a much higher infant mortality than West Macclesfield or Sutton, although combined with Hurdsfield, where the infant mortality has hitherto averaged lowest. This is what one would expect, having regard to the sanitary condition of East Macclesfield. A large part of East Macclesfield lies in the hollow of the Bollin, chiefly on clay, while West Macclesfield is higher and chiefly on sand. Dampness of site, however, and inferiority of house accommodation are less important factors in the production of this mortality than the social and moral state of parents. A large proportion of infant deaths are attributed to diarrhoea and bronchitis, both to a certain extent preventable diseases and capable of considerable control by the intelligence and forethought of parents. The Medical Officer of Health believes the absence of rudimentary knowledge of the conditions governing infant life, is more productive of these diseases than want, irresponsibility and neglect. He is of opinion that "a material lessening of infantile mortality would follow a more general instruction of the older girls in the continuation schools in the first principles of infant feeding and rearing, beside other health matters." At present all the local Authority can do is to improve general sanitary conditions, and see that the milk supply is pure and collected and distributed in a cleanly manner.

Zymotic Mortality.—The number of deaths in 1896 from the chief zymotic diseases was 121, viz.: 2 scarlatina, 72 diphtheria and membranous croup, 3 typhoid fever, 14 whooping-cough, and 30 diarrhoea. This is equal to a zymotic death-rate of 3.3—a high rate. The zymotic death-rate steadily fell from 1874 to 1894. In 1895 and 1896 there has been a sudden rise, and this has been due to the presence of diphtheria in epidemic form. As indicating the difference in healthiness of different districts in the town, it is noted that whereas the

zymotic death-rate was only 1·6 in West Macclesfield, it was 4·2 in East Macclesfield and 3·5 in Sutton.

Notification of Infectious Disease.—During 1896 299 cases of infectious disease were reported. Of these, 280 were notified by medical practitioners, 5 by occupiers, 5 by school officials, and 9 by the Registrar. The cases of disease notified by medical practitioners were as follows:—28 scarlatina, 227 diphtheria, 1 membranous croup, 22 typhoid fever, and 2 puerperal fever. Of the cases notified by the Registrar, 7 were cases of croup.

Scarlatina.—There were fewer cases of this disease than in any recent year. There were only 29 cases and 2 deaths. Ten of the 29 were under five years old. Sixteen of the cases and both the deaths were in West Macclesfield. No case was removed to Hospital.

Diphtheria continued to be epidemic throughout the year. From 1886 to 1894 the total number of cases notified by medical practitioners was 29 (including 3 cases notified as croup)—*i.e.*, 3·2 a year. In July, 1895, the disease began to be prevalent, and continued so more or less to the end of 1896. During 1895 there were 123 cases (including 6 croup) notified, and during 1896 there were 245 cases (including 8 croup) notified. The cases notified as membranous croup are included, as this and diphtheria may be taken as the same disease for preventive purposes, especially when diphtheria is known to be prevalent. Of the 245 notified in 1896, 72 proved fatal, equal to a mortality of 29·3 per cent. of the known cases. This does not represent the true case mortality, as there are a large number of mild cases which do not come under the notice of medical men and are not notified. Of the cases, 75 were under five years of age (30·6 per cent.), and of the deaths, 44 were under five years of age (61·1 per cent.).

In the last Annual Report it was stated that on December 28th, 1895, the Health Committee, on the advice of the Medical Officer of Health, passed a resolution advising School Managers to prolong the Christmas holidays for a fortnight, and that a circular letter was sent to Managers, and all Schools (including some Sunday Schools) remained closed in consequence till January 20th. As a result there was a slight fall in the weekly number of cases notified during the closure, but in the latter part of January and in February the number of cases increased again.

The following table furnishes some interesting particulars as to the incidence of the cases of diphtheria in 1896:—

1896.	Population.	No. of cases of Diphtheria reported.	No. of separate families.	Sanitary condition of houses classified.				Mortality per cent. of notified cases.	Number removed to Hospital.
				Good.	Fair.	Indifferent.	Bad.		
West Macclesfield, (excluding Public Institutions). ...	16616	94	82	23	32	17	10	26·6	18
East Macclesfield	13095	122	102	21	36	23	22	27·8	28
Sutton	5060	26	22	4	7	6	5	27·	6
The Borough ...	34771	242	206	58	75	46	27	28·8	52

It will be observed that the number of cases in East Macclesfield is in excess of the number in West Macclesfield, although the latter has a larger population. In 1895 there were more cases in West Macclesfield. The number of cases in Sutton was also much higher in 1896 than in 1895. It appears as if the disease had partially exhausted its epidemicity in West Macclesfield in 1895, and spread more fully during 1896 in East Macclesfield and Sutton.

It will also be observed from this table that the number of infected houses classed as bad is relatively highest in Sutton and lowest in West Macclesfield.

On the question of the relationship of insanitary and damp dwellings to diphtheria, the Medical Officer of Health writes:—“Although it cannot be proved definitely that these conditions can produce infection *de novo*, there is no doubt that the children living in such surroundings are more liable to attack when infection is rife, and that the symptoms are often more violent. A large proportion of the nuisances recorded in the books during the year have come under notice through the notification of this infection.”

As already stated the disease had been epidemic for many months before the year 1896 began. In January, 36 cases were reported (8 of which proved fatal) chiefly in the lower part of Hurdsfield. During February there were 22 cases reported, of which 7 were fatal. Only 2 cases were reported in the week ending February 26th. However, in the first week in March, fresh cases occurred in the neighbourhood of Beech Lane, and towards the middle of this month 7 cases occurred about Black Road. In March, also, 9 children attending the same school were affected, and the school was temporarily closed and disinfected. There were in all 33 cases in March, of which 9 were fatal. During April there were 20 cases, 6 being reported simultaneously in Wellington Street West, and the others being chiefly about Bank Street and Black Road. In May there were only 10 cases; but in June the number rose to 19, only 3 of which were traceable to a common infection. Of the 49 notified in the second quarter 16 died. In July were 15 cases, five occurring almost simultaneously in a row of cottages in Lunt Hill. Of this group 4 were removed to Hospital at once, and the fifth died next day. The premises were promptly disinfected, and other children in the same street were kept from school for three weeks. The number of notifications began to increase again about the middle of August, and in the third week of September, 10 cases were notified. Nine of them were traced to a common infection in St. Paul's Infant School, 6 being children in the same class. The apparent cause of this outbreak was a child who had been kept from school nearly seven weeks from a mild attack of diphtheria, but was yet infective on his return to school. The school was closed and disinfected, but three more children were infected at home from these cases. There were 62 cases in the third quarter, and 18 deaths. In October, except in respect of four cases at Buxton Road, there was no grouping of cases in any one part of the town. In November, also, the cases were equally scattered. During December, however, there was an outbreak of seven cases in the neighbourhood of Richmond Hill, Black Road. Six of them were in Daisy Bank, and were traceable to two cases which had occurred there early in November. In the fourth quarter there were 43 cases and 14 deaths.

The closing of all the Elementary Schools and some Sunday Schools for 14 days in January (*i.e.* prolonging the holidays) has already been referred to. On March 16th, one of the school-rooms at the National School was closed three days for disinfection. St. Paul's Infant School was closed from September 21st to October 12th. This is all the school-closing that was done at the instance of the Authority. It may be noted that there was no definite decline in the number of cases in consequence of the prolonged Christmas holidays, or the ordinary midsummer holidays, from June 18th to July 13th. The policy

adopted has been not to interfere with a school unless on evidence that it was a place of infection. Children in contact with infection have been caused to stay away from school for eight days. Infected cases have ordinarily been kept from school two months, and children from infected houses have been kept from school. The Medical Officer of Health thankfully acknowledges the assistance given him by teachers and by School Board officials. The latter have given information of children absent from school with symptoms which might be serious, and have made inquiries, etc., the result being information of many cases which it would have been unsafe to allow to attend school.

Disinfection.—The present method of disinfection is solely by fumigation with burning sulphur. Although this may be adequate for walls and floors, when supplemented by cleaning and scrubbing, experience and experiment prove that it is unreliable for the disinfection of clothing, bedding, etc. Among the infectious cases in 1896, there were five which appeared to derive their infection from clothes. There were also instances of a return of infection to households after fumigation and cleansing had taken place; and these might have been attributed to persistence of infection in clothes, etc.

Disinfecting Apparatus needed.—For the efficient disinfection of bedding, clothes, etc., a steam disinfector is needed. An apparatus of this nature is quite reliable, and does not injure even delicate-coloured materials. The Medical Officer of Health hopes that steps will be taken for providing this during the current year.

Typhoid Fever.—There were in all 23 cases notified, three of which proved fatal. Two of the cases occurred in the first quarter, five in the second, ten in the third, and six in the fourth.

Three cases were traced to an origin outside the Borough, one only was attributed to a previously known case. The sanitary condition of 5 of the infected dwellings was unsatisfactory. The infection of this disease is very liable to be spread before the sufferer is forced to take to his bed and call medical assistance, and consequently before notification, which is also delayed by the difficulty of making an early diagnosis. When the nature of the disease is recognised, and the proper precautions taken, there is little danger of further infection. It is important therefore to enquire where the patient has been, and to empty and disinfect all ashpits likely to have been infected by excreta, &c.

Phthisis.—This most serious of all diseases is occupying the attention of sanitarians more and more. During 1896, there were 92 death from this cause registered in the district. Thirteen of these were of persons not belonging to the Borough. There were thus 79 deaths among the local population. This

is equal to a phthisis death-rate of 2·2 per 1,000 living—a high rate, above the high average in the Borough.

The way this disease is propagated and the means for keeping it in check were referred to in the Report for 1895. The first step, before taking any active preventive measures, is to enlist the interest and assistance of the public by disseminating information about the disease. This has been done by many Authorities who have prepared and distributed leaflets upon the subject. When the infectious nature of the disease is acknowledged those having to do with consumptive patients will submit to the guidance of medical men, if only from a feeling of self preservation.

It is now the generally accepted opinion of medical men that the milk of tuberculous cows is the cause of much consumption, especially among children. Although Sanitary Authorities have no power to examine and condemn cows which are unfit to give milk for human food, they can by their influence support and give preference to farmers and milksellers, who supply milk from herds, which are periodically tested and certified as free from consumption. Veterinary surgeons have in the tuberculin test a sure guide to the detection of this disease in cattle.

The Isolation Hospital.—During 1896 the Hospital was much used for the isolation and treatment of cases of diphtheria. It was necessary, however, to close it for some time for renovation. In all 52 cases were treated in Hospital, 6 of which proved fatal, giving a mortality of 11·5 per cent. Only 4 of the 52 patients were adults. Six mothers were allowed to attend their children. Nineteen of the more severe cases were treated with antitoxin. In one case a surgical operation was necessary.

At the commencement of the year there were 3 patients in Hospital. Twelve patients were admitted in January and 3 in February. From March 6th to April 5th the Hospital was closed for urgent repairs, and the cooking-stove and ward-stove were replaced by new ones. On reopening, 3 cases were admitted. From May 9th to 29th the Hospital was again closed, while new flue pipes for three stoves were fixed, and other repairs done. From May 29th to September 2nd, 21 patients were admitted. On the latter date the Hospital was again closed till December 17th, and during part of this time it was undergoing renovation.

Beside the new stoves, pipes and fittings above referred to, the arrangements at the wash-house were improved, fire-buckets were provided, and an additional out-house for the storage of wood and coal, the walls and roof of the Hospital were repainted and the floors covered with linoleum, and the ground around the Hospital was asphalted for a width of 30 feet in front and 6 feet behind.

The cost of maintenance for the year was as follows :—

	£	s.	d.
Food, &c., Fuel and Lighting, Wages of			
Nurses and Assistants ...	157	5	4
Cost of Renovation and other expenses ...	205	1	5
	<hr/>		
	£362	6	9

A Permanent Hospital needed.—In previous Annual Reports the inefficiency of the present temporary Hospital, and the necessity of providing further accommodation has been pointed out. Although the repairs carried out in 1896 make this need somewhat less urgent, the Medical Officer of Health is “still of opinion that the provision of a permanent building is a standing necessity,” and that the cost thereof “would be an economical expenditure, having regard to the cost to the public of a prevalence of infectious disease” such as was experienced in 1896. He attributes the reluctance of parents to allow their children to be removed partly to the appearance of the existing structure, which gives the impression of want of comfort. It is necessary to keep up large fires in the stoves to warm the wards in winter.

On October 1st delegates from the Borough of Macclesfield, from Macclesfield and Disley Rural Districts, and from Yeardsley-cum-Whaley Urban District, met the Isolation Hospitals Act Sub-Committee of the County Council, to confer as to the formation of a combined Hospital District. It was then resolved to postpone, for three months, the consideration of the recommendations to be made upon the above named districts, to give time for the Councils of such Districts to confer together as to carrying out the opinions of the Sub-Committee as submitted to their representatives.

Vaccination.—It is satisfactory to hear from the Vaccination Officer that only one of the 917 children born in 1895 remains unaccounted for in this respect.

Common Lodging-houses.—During the year 780 visits were paid to the common lodging-houses. An average of 170 persons per night were accommodated. No proceedings were taken, and no outbreak of infectious disease was traced to a common lodging house. No fresh license was granted in 1896.

Slaughter-houses.—There are at present 28 registered slaughter-houses in the Borough, of which 22 are in regular use. One house was licensed for the first time in 1896, on condition that the license be given up if at any time the Corporation provide an abattoir. During the year six slaughter-houses were repaired. The Inspector paid 552 visits of inspection.

Unsound Food.—Ninety pounds of fruit were, during the year, seized and destroyed as unfit for human food.

Dairies, Cow-sheds, and Milk-shops.—There are now 57 registered milk-houses in the Borough. The Inspector paid 173 visits of inspection. No proceedings were taken, and in no case did it appear that infectious disease was transmitted by milk.

Bakehouses.—There are 61 bakehouses in the Borough, seven of which are untenanted. During the year there were seven houses repaired, three were improved as regards drainage and two were ventilated. The Inspector paid 92 visits.

The Sale of Food and Drugs Acts.—During the year 37 samples of food were submitted for analysis to the Borough Analyst. One was found to be adulterated and the vendor thereof was proceeded against.

New Houses.—Twenty-five new houses were built or in the course of building in 1896, six of which were workmen's dwellings.

Houses Unfit for Habitation.—During the year the Medical Officer of Health inspected a number of houses which appeared likely to prove unfit for habitation, but up to the close of 1896 he had not presented a report upon them.

Refuse Removal.—To keep the ashpit-middens from becoming a nuisance it is necessary to increase the weekly number of loads removed, year by year. The number of loads taken by farmers decreases every year. In 1896 the number of loads removed at the cost of the Borough was 12,407, the expenditure thereon being £1,807 12s. 6d.

Re-construction of Privies and Ashpits.—During the year 33 ashpit-middens were converted into water-closets, and 23 ashpit-middens were converted into waste-water closets. Ninety-six new water-closets were built, of which 28 were ordinary water-closets, 45 were waste-water closets, and 23 were latrines. No new midden-closets were built. This is a good return as compared with that in previous years. The Medical Officer points out the importance of the Authority allowing no re-construction of a closet in a crowded district, where there is a sewer, except as a water-closet.

The Main Drainage Works.—The execution of these works was commenced on October 7th, 1895, and by the end of that year 1,936 yards of sewers had been laid. By the end of 1896 the whole of the sewers—a total length of about 14,250 yards—had been laid. The pipes are from 8 inches to 30 inches in diameter. At the Disposal Works there have been constructed three rectangular precipitation-tanks, each measuring 80 feet by 35 feet (having a total holding capacity of 306,700 gallons) and two circular tanks 25 feet in diameter and $34\frac{3}{4}$ feet deep (having a total holding capacity of 127,800 gallons).

The sewers have been laid in straight lengths so that they can be lighted and inspected between the manholes. This is

important because the large size of the pipes in proportion to population, will cause the ordinary flow of sewage in dry weather to be too weak to keep the pipes well scoured. A large flushing-tank has been placed at the south end of the sewer, which will be a great boon in prolonged dry weather. There will also be flushing advantages from the weekly emptying of dye-house tanks.

During the current year or in the near future the Health Committee will be occupied in finding out the cheapest and most efficient method of treating the sewage. It cannot be expected this will be ascertained at once, as every sewage has different properties.

The present tendency of experts is to lay less and less stress on chemical means, and to copy nature in a condensed form, that is to promote decomposition in the settling tanks through the cultivation of bacteria. The advantages claimed for this system are chiefly two-fold, in the first place it does away with the necessity of sludge pressing machinery, and in the second the working expenses are reduced by the cost of chemical precipitants.

Whether this process will prove successful with sewage containing Manufacturer's refuse, as it has by all accounts with part of the sewage of Sutton and Exeter, can only be settled by experiment.

Inspector's Report.—According to the Report of Mr. Wm. Jenkins, the Sanitary Inspector, the number of nuisances entered in the books in 1896 was 401, the number of nuisances removed was 375, and the number of complaints received was 203. The number of preliminary notices and letters was 691, and the number of formal notices served was 82. The number of house drains repaired and cleansed was 107, the number of ashpits, &c. repaired and improved was 108, and the number of sink waste-pipes disconnected was 15. There were 203 houses inspected in sanitary survey. There were 277 houses specially inspected on account of infectious disease, and to these 1373 visits were paid.

There were 64 canal boats inspected.

Temperature and Rainfall.—The Medical Officer of Health submits a tabular statement showing the maximum, minimum and mean temperature, and the rainfall and number of rainy days during each month in the year. It is prepared by

Mr. J. Dale from daily readings of the instruments in the old park by Mr. Roscoe.

1896.	Temperature.			Rainfall.	
	Maximum.	Minimum.	Mean.	Total depth in inches.	No. of days on which Rain fell.
January ...	51.6	24.1	39.3	1.46	11
February ...	53.7	18.5	39.1	1.97	10
March ...	60.4	27.4	42.0	4.32	24
April ...	64.2	29.7	46.5	2.07	14
May ...	76.2	30.5	52.1	0.52	5
June ...	82.9	41.9	60.0	3.86	15
July ...	79.2	41.0	59.5	1.59	15
August ...	69.7	39.7	55.6	3.09	16
September ...	68.7	38.8	52.5	4.88	27
October ...	61.2	25.9	42.4	4.15	23
November ...	51.2	25.5	38.9	1.57	8
December ...	52.2	26.3	37.8	4.65	22
Year.	82.9	18.5	47.1	34.13	190

The total rainfall in 1896 was 2.24 below the yearly average for this district.

Barometer.—The maximum height of the barometer (30.89 inches) occurred on January 9th, and the minimum of the year (28.65 inches) occurred on March 4th.

The Prevailing Winds were westerly. Strong westerly and north-westerly gales occurred in March, September, October and November. There was a remarkable absence of easterly winds during the earlier months of the year, when they are generally prevalent.

STALYBRIDGE.

Municipal Borough.

Medical Officer of Health—DR. F. J. ROBERTS-DUDLEY.

Population at Census, 1891—26783.

Estimated Population in middle of 1896—28044.

Area in Acres—3135.

Birth-rate per 1,000 living—29.8.

Death-rate per 1,000 living—20.3.

Death-rate from seven principal Zymotic Diseases—2.4.

Deaths under one year to 1,000 births—168.

The constituent parts of this Urban District are as follows:—

		Area in Acres.		Population at Census.
Part of Dukinfield	...	248	...	11831
Part of Staley	...	2202	...	7674
Part of Ashton-under-Lyne	...	685	...	7278

During 1896 the number of births registered in the Borough was 837, and the number of deaths registered (including 39 deaths in the Workhouse, Ashton-under-Lyne, of persons removed from the Borough, and 18 deaths in the Infirmary) was 572. Of the births, 432 were males and 405 were females. Of the deaths, 286 were males and 286 were females. The birth-rate is 2·0 above the mean birth-rate in 1892-95, and the death-rate is 1·9 below the mean death-rate in 1892-95.

There were 22 deaths from scarlatina, 5 from diphtheria, 3 from membranous croup, 3 from typhoid fever, 5 from measles, 23 from whooping-cough, and 8 from diarrhoea. The principal zymotic diseases death-rate was thus 2·4. There were also 3 deaths from rheumatic fever, 42 from phthisis, 146 from bronchitis and pneumonia, 27 from heart disease, and 9 from injuries.

The proportion of deaths among infants is not as large as it has been in recent years, 141 of those who died being under one year old. That is to say, about 1 in every 6 of those born died before completing their first year.

The Borough is divided into four Wards—Lancashire, Staley, Dukinfield, and Millbrook Wards. The general death-rate and proportion of deaths among infants in these four Wards were as follows:—

		Death-rate.		Deaths under 1 year to 1,000 Births.
Lancashire Ward	...	17·4	...	133
Staley	„	17·2	...	155
Dukinfield	„	22·5	...	205
Millbrook	„	13·0	...	142

Infectious Disease Notified.—There were 272 cases of infectious disease notified, viz. : 208 scarlatina, 14 diphtheria, 3 membranous croup, 29 typhoid fever, and 18 erysipelas.

Scarlatina.—Exactly half the number of cases notified were children under five years old. Thirty-five cases, of which 6 were fatal, occurred in Lancashire Ward; 85 cases, of which 8 were fatal, occurred in Staley Ward; 69 cases, of which 7 were fatal, occurred in Dukinfield Ward; and 19 cases, of which 1 was fatal, occurred in Millbrook Ward.

Diphtheria and Croup.—The 3 cases of croup and 6 of the 14 cases of diphtheria notified were children under five years old. All the cases reported as croup and 5 of the cases reported as diphtheria proved fatal.

Typhoid Fever.—Of the 29 notified cases of this disease 2 were in Lancashire Ward, 6 were in Staley Ward, and 21 were in Dukinfield Ward. One of the cases in Staley Ward and 2 of the cases in Dukinfield Ward terminated fatally. The Medical Officer of Health visited every house infected, and made a careful inquiry into each case, but could find nothing specially to account for the disease.

Preventing the Spread of Infectious Disease.—In all cases of zymotic disease the houses are at once visited by the Medical Officer of Health and Inspector of Nuisances. Printed instructions for the prevention of the spread of the disease are left at the houses, disinfectants are supplied, the houses are fumigated with sulphur, and in severe cases the bedding and clothing are burnt. In addition, the premises are examined to ascertain if there be sanitary defects. On any defects being discovered, notice thereof is at once given to the landlord and tenant, and to the Sanitary Committee. The latter immediately take measures to have the premises put in proper sanitary condition.

Inspection.—The Medical Officer of Health makes visits of inspection with the Inspector of Nuisances, and on many occasions they have been accompanied by the Chairman and members of the Sanitary Committee.

Sewage Scheme.—The Corporation are engaged in carrying out a large sewage scheme, which when complete ought to improve materially the health of the Borough, by removing all sewage from the river which runs through the centre of the town. Very considerable progress has been made with this work during the year.

Sanitary Accommodation at the Post-Office.—A lavatory and sanitary convenience for the Post-Office, the need of which has been pointed out in previous Reports, were provided in 1896.

Sale of Food and Drugs Acts.—Under these Acts 10 samples (6 of butter, 3 of milk, and 1 of lard) were submitted for analysis. All were certified by the Borough Analyst to be pure.

Water-supply.—The water supplied to the Borough is absolutely pure, and abundant in quantity.

Insanitary Property.—Two houses (Nos. 2 and 5, Back Castle Street) were closed by order of the Authority. The landlord afterwards relet the houses, and for this he was summoned before the magistrates and fined. Nineteen properties, situated in various parts of the Borough, in bad sanitary condition, have been put in proper order, under the superintendence of the Borough Surveyor.

Lodging-houses.—The Medical Officer of Health has many times during the year visited all the registered lodging-houses within the Borough. He found them in a fairly sanitary condition.

Inspector's Report.—The Inspector reports that 404 nuisances have been abated during 1896, and 191 houses have been fumigated. There were 69 smoke observations taken; but the Sanitary Committee took no action with regard to smoke nuisances. The emptying of ashpits is supervised. During the year there were 7607 emptyings. The number of loads of ash-pit refuse removed was 8077.

Temperature and Rainfall.—The Medical Officer of Health submits the following tabular statement, showing the mean temperature and depth of rainfall during each month in the year. The results were recorded at Stalybridge:—

1896.	Temperature.				Rainfall 12 inches above ground.
	Maximum in Shade.	Minimum in Shade.	1 foot below ground.	4 feet below ground.	
January ...	45	36	34	41	1.51
February ...	45	34	32	40	2.28
March ...	48	37	35	40	4.49
April ...	54	40	38	41	1.73
May ...	63	44	45	44	0.44
June ...	69	53	52	52	2.72
July ...	68	52	51	55	2.21
August ...	61	50	47	54	3.09
September ...	60	49	45	52	6.60
October ...	48	38	35	46	4.98
November ...	44	35	31	40	1.27
December ...	43	35	33	39	4.25

ALDERLEY EDGE.

Urban District.

Medical Officer of Health—DR. G. W. DOWLING.

Population at Census, 1891—2270.

Estimated Population in middle of 1896—2270.

Area in Acres—589.

Birth-rate per 1000 living—19.3.

Death-rate per 1000 living—11.4.

Death-rate from seven principal Zymotic Diseases—0.4.

Deaths under one year to 1000 births—45.

The Urban District of Alderley Edge is formed out of a part of Chorley, a part of Fulshaw and a part of Bollin Fee. The two latter include a formerly detached part of the parish of Pownall Fee. The area and population of these three portions of the district appear to be as follows:—

		Area in Acres.		Population at Census.
Part of Chorley	...	476	...	1838
Part of Fulshaw	...	113	155	
Part of Bollin Fee	...		277	

The number of births registered in the district, in 1896, was 44. The number of deaths registered in the district, in 1896 (excluding four deaths occurring in the district, but not belonging thereto), was 26. The mean birth-rate for the four years 1892-95 was 22.9, and the mean death-rate for the same four years was 12.0. The birth-rate was therefore 3.6 lower, and the death-rate 0.6 lower than the mean of recent corresponding rates.

Of the 26 deaths, 1 was due to typhoid fever, 1 to rheumatic fever, 3 to phthisis, 3 to bronchitis or pneumonia, and 3 to heart disease.

Infectious Disease.—There were 14 cases of infectious disease notified, viz.:—9 diphtheria, 3 typhoid fever, and 2 erysipelas. No case of scarlatina was reported. No case of measles (in this district notifiable) was reported.

Diphtheria.—Three of the cases of this disease appeared to have been contracted outside the district, and 4 other cases were thereby infected. Two cases the Medical Officer of Health believes to have been due to insanitary defects, since rectified.

Typhoid Fever.—One of those infected with typhoid fever came into the district while suffering from the disease. The two other cases occurred in one house, situated in a very low and damp part of the district, and kept in an unsatisfactory condition. The insanitary state of the house has been improved.

Isolation Hospital Scheme.—The District Council have decided to join with Bucklow and other Districts in forming a Joint Hospital District. Having an available hospital at a convenient distance will be a great advantage.

Water-supply.—This has been adequate during the year, but many complaints have been made on account of hardness. In the early part of the year the colour was not satisfactory.

Dairies, Bakehouses, and Slaughter-houses.—These have been inspected and found in satisfactory condition.

Middens, &c.—Several privy-middens have been converted into water-closets and dry ash-pits, others have been inspected and are now receiving attention. The scavenging

department has been well supervised. Of 17 pig-sties inspected, 3 were ordered to be done away with.

Disinfecting Apparatus needed.—The Medical Officer of Health recommends the District Council to erect a steam disinfector where the clothing, bedding, &c., of infected patients could be efficiently disinfected.

ALSAGER.

Urban District.

Medical Officer of Health—DR. H. CRUTCHLEY.

Population at Census, 1891—1912.

Estimated population in middle of 1896—2500.

Area in Acres—2241.

Birth-rate per 1000 living—19·2.

Death-rate per 1000 living—9·2.

Death-rate from seven principal Zymotic Diseases—0.

Deaths under one year to 1000 births—62.

In 1896, the number of births registered in the district was 48, and the number of deaths registered in the district (including one which took place in the Workhouse at Arclid) was 23. Both birth-rate and death-rate are exceptionally low. The number of deaths of infants under one year old was 3, a small proportion. Of the whole number of deaths 2 were from phthisis, 2 from bronchitis, 3 from heart disease, and 4 from malignant disease (cancer).

Cases of Infectious Disease Notified.—Fourteen cases of infectious disease were notified, viz: 9 scarlatina, 3 typhoid fever, 1 puerperal fever, and 1 erysipelas.

Measles of a mild type was prevalent during the early months of the year.

Typhoid Fever.—The 3 recorded cases of this disease appear to have originated outside the district.

Diarrhoea.—Very few cases of summer diarrhoea came under observation.

Isolation Hospital accommodation.—Not much advance has been made during the year towards obtaining this. It has been proposed to open the small-pox hospital at Arclid, for the admission of cases of other infectious disease; but as this hospital is at present only adapted for the reception of one disease at the same time, it would require considerable structural alterations and additions before it would, even temporarily, meet the reasonable requirements of Congleton Rural District, Sandbach and Alsager.

Slaughter-houses and Bakeries have been inspected and found in satisfactory condition.

Nuisance from Piggeries.—The too close proximity of piggeries to cottages has given rise to complaint of nuisance, and in some cases not without cause. More particular attention to cleansing has somewhat diminished the grounds of complaint. The Medical Officer of Health suggests that the bye-laws should be so arranged as to enable such cases to be more efficiently dealt with.

Sewers and Sewage treatment.—The general condition of the sewers has been improved, a result no doubt of better flushing. At the filtration area also, the sewage has been more efficiently distributed over the land. However, more frequent attention is required at the filtration area, as the effluent has occasionally been found insufficiently purified.

Water-supply.—During the year 14 samples of suspected water have been examined by the County Analyst, and with few exceptions have been pronounced “unfit for domestic use.” About 1566 yards of water-mains have been laid in 1896, bringing the public water-supply within reach of various properties with doubtful, condemned or insufficient supplies. The District Council has given instructions with a view to obtain the closing of wells unfit for domestic use.

Pollution of Watercourses.—The nuisance occasioned by the pollution of the Alsager Brook with chemical products is under the consideration of the County Council and measures are being taken for its abatement. The sewage contamination of the Talke and Audley Road Watercourse has been effectually stopped by the District Council taking over the offending sewer and connecting it with their system. The Cresswellshaw Brook has become partially obstructed below the filtration area, so that the level of the water in the Brook is above the effluent pipe, preventing an examination of the state of the effluent as it enters the Brook. Instructions for having the obstruction removed should be given.

ALTRINCHAM.

Urban District.

Medical Officer of Health—DR. A. GOLLAND.

Population at Census, 1891—12440.

Estimated population in middle of 1896—13212.

Area in Acres—662.

Birth-rate per 1000 living—29.3.

Death-rate per 1000 living—17.6.

Death-rate from seven principal Zymotic Diseases—1.7.

Deaths under one year to 1000 births—159.

In 1896 the number of births registered was 388, and the number of deaths registered (exclusive of 4 deaths not belonging

to the district and inclusive of 8 deaths occurring outside the district of persons belonging thereto) was 233. The mean birth-rate for the four years 1892-95 was 29.6, and the mean death-rate for the same four years was 18.6. Thus, in 1896, the birth-rate was 0.3 below the mean in recent years, and the death-rate was 1.0 below the mean in recent years.

The number of deaths from the seven principal zymotic diseases was 23, viz. :—1 scarlatina, 5 membranous croup, 1 typhoid fever, and 16 diarrhoea. There was also 1 death from rheumatic fever. There were 19 deaths from phthisis, 55 from bronchitis or pneumonia, and 17 deaths from heart disease.

Cases of Infectious Disease Notified.—Sixty-eight cases of infectious disease were notified, viz. :—31 scarlatina, 10 diphtheria, 3 membranous croup, 12 typhoid fever, 1 continued fever, and 11 erysipelas.

Scarlatina.—The 31 cases occurred in 21 houses. Twenty-six of these cases were removed to Lloyd's Fever Hospital for isolation and treatment, and all the 26 recovered. The disease appeared in various parts of the district during the earlier 9 months of the year, but at no time was there anything like an epidemic. The disease was successfully dealt with by the removal of most of the cases to Hospital, and careful isolation at home where that was found possible.

Diphtheria and Croup.—Of the 10 cases notified as diphtheria, one family is responsible for 6, the disease having been imported from another district by one of the family. All the 10 cases recovered. Two were treated in the Fever Hospital. Though there were only 3 cases notified as croup, no less than 5 deaths were ascribed to this cause, showing that notification of this disease is deficient.

Typhoid Fever.—The 12 cases of this disease occurred in separate houses, and mostly in the third quarter of the year. There appeared to be no special general cause. Two of the cases were removed to the Fever Hospital.

Erysipelas.—The 11 cases of this disease notified were not in any way connected. All terminated in recovery.

Diarrhoea.—Of the fatal cases of this disease, 11 occurred in the third quarter of this year, and 12 were of children under five years of age. Sixteen is a large number of deaths from diarrhoea, being equal to an annual death-rate of 1.2. During the year 1895 there were 34 deaths recorded as due to this disease, but during the 14 years immediately preceding this the average number of deaths from diarrhoea was 8.

Phthisis.—Nineteen deaths recorded from phthisis is equal to a death-rate of 1.4 per 1,000 living. In 1895, the number recorded was only 14, but during the 5 years immediately preceding it averaged 26.

Bronchitis, &c.—The 55 deaths ascribed to bronchitis or pneumonia, is equal to a death-rate of 4.16 per 1,000 living, which is a high rate.

Measles and Whooping-cough.—Neither of these diseases being notifiable the number of cases occurring is not known. However, a great number of cases of measles were met with during the year. Of whooping-cough there was very little till the end of the year, when there were indications of its spread. There was no death ascribed to either disease.

Lloyd's Fever Hospital.—Thirty cases have been treated in this Hospital during the year, viz:—26 scarlatina, 2 diphtheria, and 2 typhoid fever. No death took place. Only one patient, a typhoid fever case, remained under treatment at the end of the year.

Water-supply.—This is derived from Manchester, and distributed by the North Cheshire Water Company. It has been of good quality, and sufficient in quantity during the year.

Common Lodging-houses were duly inspected as required, and all except one were found satisfactory.

Dairies and Bakehouses.—All dairies, cowsheds and bakehouses were inspected and found satisfactory. At one bakehouse a water-closet was ordered to be built off.

Slaughter-houses were also inspected, and all except three were found satisfactory. Steps were taken to remove defects as regards these three.

Workshops also were kept under inspection, to see that regulations were complied with. At one, provision of a water-closet was obtained.

Nuisance Abatement.—Very many nuisances were abated in 1896, a considerable part of the work required, being done without the serving of formal notices. One hundred and twenty-eight yards, and the passages behind 80 houses were paved and repaired, 148 house or yard drains were trapped or repaired and cleaned, 20 rain spouts, or sink waste-pipes were put in order. Sixty privies and ash-pits were rebuilt, and 10 were converted into water closets, 6 ash-pits were roofed, 20 were cemented over, and 30 were provided with doors. At 14 stables defects were remedied, and at 24 pigsties nuisances were abated, in 25 instances the removal of accumulations of manure was obtained. Ten cases of overcrowding were reported, and steps taken to abate the nuisance. Three smoke nuisances were reported, and notices for abatement served. Twenty-seven cases of chimney-firing were reported, of which 24 were taken before the Magistrates.

Canal Boats.—Sixty-five visits were made to 56 canal boats. The certificates of registration showed that there was accommodation for 273 persons. The boats were occupied by

98 males, 15 females and 9 children under 12 years of age. In 3 of the boats there was no water-cask on board, 3 boats required repairing and painting, 4 boats carried no certificates, and in 2, the registered number was illegible.

ASHTON-UPON-MERSEY.

Urban District.

Medical Officer of Health—DR. C. J. RENSHAW.

Population at Census, 1891—4234.

Estimated Population in middle of 1896—5200.

Area in Acres—1622.

Birth-rate per 1000 living—22.4.

Death-rate per 1000 living—11.3.

Death-rate from seven principal Zymotic Diseases—0.7.

Deaths under one year to 1000 births—128.

This is the second Report of the new Urban District of Ashton-upon-Mersey. During 1896, the number of births registered was 117, and the number of deaths registered (including 3 which occurred outside the district among persons belonging thereto, and excluding 1 which occurred in the district but did not belong thereto) was 59. The birth rate is 3.0 lower than the birth-rate in 1895, and the death-rate is 2.5 lower than the death-rate in 1895. Fifteen deaths were of infants who had not completed their first year. Of the 59 deaths, 4 were due to diarrhoea, 6 to phthisis, 9 to bronchitis or pneumonia, and 6 to heart disease. Thus the chief cause of death was lung disease, largely owing to the changeable weather.

Cases of Infectious Disease notified.—Twenty-one cases of infectious disease were notified, viz. :—14 scarlatina, 3 diphtheria, 2 typhoid fever, and 2 erysipelas.

Scarlatina.—The cases of this disease have been sporadic, and the infection seems to have been wind-carried, as there was no evidence in most of the cases of contagion. Great care has been taken to prevent the spread of infectious disease.

“The Wakes.”—The annual incidence of the Wakes, held in the first week of November, is a source of danger to the community. The vans are clean, and the accommodation therein sufficient, but the congregation of so many people from so many different centres is conducive to the spread of disease. In 1896, scarlatina and diphtheria appeared immediately after the Wakes; in a previous year, an epidemic of measles followed the Wakes.

Isolation Hospital scheme.—During the year, the attention of the Authority has been given to the advisability of making hospital provision for infectious cases. At the suggestion of the County Council, a Provisional Order was applied

Mr. Foster, Surveyor and Inspector, gives a complete and satisfactory report of the work done in his department. During the year, 46 nuisances have been abated, including one house closed as insanitary, one offensive privy converted into a water-closet, and one case of overcrowding. The ash-pits are emptied every ten days, by the employés of the Council. The use of movable ash-bins is being extended.

The milk-shops and dairies, and also the slaughter-houses have been inspected during the year, and found in order.

Twelve private streets have been made, including sewerage where required, under the Private Street Works Act, 1892.

Fifty-three houses have been built and occupied during the year, and 90 houses are in course of erection.

A Bill is being promoted in Parliament, for increasing the powers of the District Council, for improving the Hoyle Lake, &c. Another Bill is being promoted for electric lighting in the district.

KNUTSFORD.

Urban District.

Medical Officer of Health—DR. T. W. H. GARSTANG.

Population at Census, 1891—4643.

Estimated Population in middle of 1896—4891.

Area in Acres—1760.

Birth-rate per 1000 living—28.3.

Death-rate per 1000 living—17.8.

Death-rate from seven principal Zymotic Diseases—1.2.

Deaths under one year to 1000 births—165.

The population, as given above, is made up of the average number of inmates in the Workhouse during the year (235), the average number of persons in the Gaol during the year (346), and the estimated number of ordinary residents in the Township (4310). In making this estimate, the Medical Officer of Health had the help of the Assistant Overseer. The estimate used in the Report for 1895 appears to have been somewhat in excess.

In the Report for 1895, which was the first Annual Report on the Urban District of Knutsford, reference was made to “four questions of first rank,” calling for the immediate consideration of the new Council. These were as follow:—

1. Cemetery.—Negotiations have been begun in connection with many sites, and though no final solution of this question of Cemetery provision has been come to, there is good hope that a satisfactory arrangement is not far off.

2. Sewage Disposal.—The effluent is examined from time to time by the Inspector of the Mersey and Irwell Joint

Committee. There has been distinct improvement during the year. Further modifications are in contemplation. The Medical Officer of Health has submitted for the consideration of the Council three suggestions, viz. :—(a) the construction of an additional settling-tank, (b) the enlargement of the filter bed, or (c) the diminution of the volume of sewage to be treated, by the diversion of the storm-water. He is of opinion that by one or other of these means a great improvement in the effluent would be effected, and considers that the last named is the simplest and cheapest.

3. Water-supply.—The Company supplying water to Knutsford have yielded to the public demand for a purer water, and are now boring for a new supply to be derived from the gravels and sandstone at a considerable depth, in quantity sufficient for the supply of the town. The use of water from the polluted stream will thus be altogether discontinued. By Christmas, 1896, the boring had reached a depth of 330 feet, and it is expected that water may be reached at any time after 450 feet is passed.

4. Isolation Hospital.—A joint application has been made to the Local Government Board for the formation of a Hospital District, to be called the Bucklow Joint Hospital District, on behalf of the Knutsford District Council and other District Councils. This Hospital District will be formed by a Provisional Order, and in due course hospital accommodation will be furnished. Several cases of infectious disease, which occurred during the year, would have been isolated in hospital had there been one. Although the Bucklow Council, by reason of the extent of their administrative area, will be most largely represented on the new Hospital Board, it will be on record to the credit of the Knutsford Council that it was their action in arranging a workable scheme with the Councils of Wilmslow and Alderley Edge, and securing a hospital site, that rendered it possible in the summer of 1896 for the large scheme to be got into working order (under pressure from the County Council) with such remarkable ease and rapidity.

The above four matters having been all satisfactorily advanced, attention is drawn to another important subject, viz. :

5. Sanitary Conveniences and Scavenging.—There are nearly 350 houses not fitted with water closets, that is more than one-third of the houses in the district. After allowing for outlying houses not served by the sewers, there still remains far too large a number provided with some form of cesspool or privy ; and many of these are old fashioned and ill-constructed. There must be, therefore, serious soil pollution, injurious to health, not to mention the nuisance caused by scavenging, attested by the number of complaints made by householders.

In 1896, the births registered in the district numbered 201, and the deaths (including 3 which occurred in the Isolation Hospital and 5 in the Workhouse, belonging to the district, and excluding a death from small-pox in the Hospital belonging to the Port of Liverpool) numbered 69. The birth-rate is 4.3 above the mean birth-rate in 1892-95, and the death-rate is 3.9 below the mean death-rate of the same four years. The proportion of deaths among infants is small.

There were 9 deaths from the principal zymotic diseases, viz. :—3 scarlatina, 1 diphtheria, 1 typhoid fever, 1 measles, and 3 diarrhoea. The zymotic death-rate is 1.3 below the mean death-rate in 1892-95. There were also 7 deaths from phthisis, 7 from bronchitis or pneumonia, 5 from heart disease, 1 death from influenza, and 1 from injuries.

There were 74 cases of infectious disease notified, viz. :—43 scarlatina, 17 diphtheria, 8 typhoid fever, and 6 erysipelas. Of these 35 cases of scarlatina, 12 cases of diphtheria, and 2 cases of typhoid fever were removed to the Hospital. The isolation in hospital of about two-thirds of all the cases notified must have had a marked effect in diminishing the risk of infection.

The cases of diphtheria occurred principally in the first quarter of the year, and the cases of scarlatina in the third quarter. No case was attributable to water-supply or milk, or to any marked extent to school attendance. Prompt removal to hospital or isolation at home prevented any general extension of the disease. The cases of typhoid fever were scattered over the district. Action was taken for the disinfection of infected houses, and the removal of any sanitary defects discovered.

Owing to the presence of measles in February, the managers, on the advice of the Medical Officer of Health, closed the schools for several weeks.

The district has been visited from time to time by the Medical Officer of Health in company with Mr. Young, the Inspector, and the general and special inspections made have been reported on. Continued progress has been made in the conversion of privies into water-closets. The sewers in the district receive the required attention. The removal of ashpit refuse is systematically effected under the direction of the District Council.

The milk-houses and shaughte-houses have been inspected, and are in very fair condition.

The district is supplied with excellent water from the Wirral Water Works.

A large number of workmen's houses have been built in the district during recent years, and there are few or no complaints of over-crowding.

BOLLINGTON.

Urban District.

Medical Officer of Health—DR. J. ALLAN.

Population at Census, 1891—3913.

Estimated Population in middle of 1896—3913.

Area in Acres—494.

Birth-rate per 1000 living—24.5.

Death-rate per 1000 living—14.8.

Death-rare from seven principal Zymotic Diseases—1.7.

Deaths under one year to 1000 births—145.

This district, the population of which was 3963 in 1881, was only 3913 in 1891. The population does not appear to have increased since the Census.

During 1896, the number of births registered was 96, and the number of deaths registered was 58. The birth rate in 1896 is 1.6 lower than the mean birth-rate in 1892-95; and the death-rate in 1896 is 1.8 lower than the mean death-rate in 1892-95.

There were 8 deaths due to zymotic diseases, viz. :—1 scarlatina, 1 continued fever, 1 puerperal fever, and 5 whooping-cough. There were 5 deaths due to phthisis, 10 to bronchitis or pneumonia, and 7 to heart-disease.

Cases of Infectious Disease Notified.—There were 33 cases of infectious disease notified, viz. :—21 scarlatina, 8 typhoid fever, 1 continued fever, 1 puerperal fever, and 2 erysipelas. All these cases were treated at home, as there is no isolation hospital in the district or available for the district.

The Diagnosis of Infectious Disease.—As regards some cases of infectious disease, such as diphtheria and typhoid fever, considerable difficulty is sometimes experienced in determining their true nature so that much valuable time may thus be lost before notification is possible, and during this time infection often spreads. To meet this difficulty arrangements have been made at the Owens College, Manchester, for the bacteriological examination of material from doubtful cases. The question arises whether under the circumstances it might not be advisable for the District Council to arrange for infectious material from doubtful cases occurring in Bollington being sent to a bacteriological laboratory for examination.

Scarlatina.—Nine of the cases of this disease were in the East Ward, 3 in the Central Ward and 9 in the West Ward. In 2 instances there were 2 cases in the same house, and in a cottage in Shrigley Road, having only 3 bedrooms and occupied by a large family, there were 4 cases. One of the cases in this cottage and another case in Palmerston Street were pupil teachers in the same school. There were 2 other adult patients—mill operatives. With these exceptions all the cases were children. The only fatal case was that of a little girl, five years old, in

Adlington Road, who died on November 19th. Cases were notified every month, except in May and June. In some instances the infection appeared to have been imported by children who attended school in the adjoining Rural District. Children belonging to infected households were kept from school; and notices were sent to mills or workshops of employés who belonged to infected households. Disinfectants were freely distributed, and as soon as practicable infected premises and clothing were disinfected with sulphur fumes.

It is almost impossible in the absence of an isolation hospital to prevent the spread of scarlatina, especially when it occurs among working people living in a very small house, having but one bedroom, or even two.

Typhoid and Continued Fever.—The case notified as continued fever occurred in Central Ward (Oldham Street), and proved fatal on April 11th. It was not a typical case of fever, and no source of infection could be discovered. All the eight cases notified as typhoid fever occurred in East Ward. The first occurred in Shrigley Road during March, being a young woman, a hat trimmer, who had been lodging in an adjoining district and came home with the disease. Her sister, a child six years old, became infected. The next case, also in March, but not in any way associated with the others, occurred in Ingersley Road, the patient being a young woman employed in a mill. The cause of the disease appeared to be the use of sewage-polluted water. The next four cases were reported simultaneously on August 19th—a mother and three children living in a house open to the surrounding country, at the top of Shrigley Road. There were drain defects in the house allowing sewer-gas to enter, and the cellar was in a filthy state. The last case occurred in September, in the same road. Here also the premises were insanitary, there being direct communication between the house and sewers. The premises where this patient worked were also insanitary.

Erysipelas.—These cases were not serious, and in no way connected. One occurred in the West Ward in February and the other in the Central Ward in July.

Puerperal Fever.—The only notified case of this disease occurred in West Ward and proved fatal in February. The patient had been attended in her confinement by a midwife. Steps were taken to prevent the spread of the disease to other lying-in women.

Whooping-cough, not being notifiable, the number of cases is not known. Certainly there were very many cases. The five deaths were registered between May 28th and July 20th. One was in Central Ward, the other four were in East Ward.

Water-supply.—The work of supplying Bollington with pure water is still unachieved. However a certain amount of preliminary work has been done. The borehole is now yielding 86,000 gallons per day. There is also a further supply of what is believed to be good water coming from certain springs which were tapped in driving the tunnel, and the works necessary to bring this supply to Bollington are being considered.

Defective Sewers.—Some of the town sewers, e.g., those in Shrigley Road, Lord Street and Princess Street, were constructed more than 30 years ago, and should be examined to ascertain if they are out of repair and the extent of deposit therein. It would be well to place a few sewer ventilators in suitable positions, and to purchase a portable tank and have the sewers flushed at least once a month, oftener in the summer.

Summary of Requirements.—In a Report presented to the Local Board, for 1883, the requirements that were then thought to be necessary were stated. It may not be amiss to reproduce this list. Can it be said that many of these have been attended to? The list of requirements ran as follows:—

- 1 Providing the district with proper water supply.
- 2 Providing the district with cottage hospital for infectious cases.
- 3 Providing the district with a disinfecting apparatus.
- 4 Providing a place for temporary storage of nightsoil, &c., &c.
- 5 Periodical emptying of ashpits and scavenging by local authority.
- 6 Providing a cemetery for district.
- 7 Improvements in drainage, with extension of same.
- 8 Cleansing bed of river and brook courses.
- 9 Providing better school accommodation.
- 10 Revision of byelaws.

Inspector's Report.—The Inspector reports that he makes inquiries with reference to infectious cases notified, sees to disinfection of premises, &c., lime washing and cleaning, and attends to all necessary notices for the prevention of the spread of infection. He has specially noted 34 properties, where nuisances have been discovered and taken steps to remedy defects and abate nuisances. He has supervised the emptying of ashpits and the removal of nightsoil. The number of loads of refuse taken by neighbouring farmers was 512, and the number of loads removed by Mr. Challoner was 33.

Dairies, &c.—The dairies and milk-shops, 17 in number, have been inspected. They were found clean and well kept.

Slaughter-houses.—The four slaughter-houses in the district have also been inspected and found clean and in order.

Canal Boats have also been inspected and found clean and in fairly good order.

BOWDON,

Urban District.

Medical Officer of Health—DR. M. DUGGAN.

Population at Census, 1891—2792.

Estimated population in middle of 1896—2890.

Area in Acres—850.

Birth-rate per 1000 living—14·8.

Death-rate per 1000 living—10·3.

Death-rate from seven principal Zymotic Diseases—0·6.

Deaths under one year to 1000 births—93.

The number of births registered in this district was 43, and the number of deaths was 30. The mean birth-rate for the four years 1892–95 was 14·3, and the mean death-rate for the same four years was 10·8. Thus, in 1896, the birth-rate was 0·5 higher, and the death rate 0·5 lower than the mean of recent years.

Four of the deaths were of infants under a year old, and 13 were of persons above 65 years of age.

Two of the deaths were due to diarrhoea (one of the principal zymotic diseases) 4 to phthisis and 3 to bronchitis or pneumonia.

Infectious Disease.—Two cases of typhoid fever, one case of scarlatina and one of erysipelas were notified, and were isolated as far as practicable. All occurred in the Bowden Vale locality. There was also a wide-spread epidemic of measles, fortunately of a mild type. Had measles been compulsorily notifiable this outbreak might have been stamped out before spreading as it did.

Nuisances.—The Medical Officer of Health, in inspecting the district, has paid particular attention to Bowden Vale. He notes that the ash-pits are still very irregularly emptied by men employed by the tenants to do so, and consequently many ash-pits are overflowing and tenants deposit their house-refuse in the back streets. He recommends the District Council to arrange for the emptying of ash-pits, so that the work may be done properly and regularly. He points out also that in some back yards hens and rabbits are kept, causing a nuisance, and that elsewhere pigsties are too near to dwelling houses.

The Sewage Farm keeps in good condition, and according to the last report of the Inspector the effluent is most satisfactory.

Dairies and Cowsheds.—The Medical Officer of Health recommends that strong measures should be taken in respect of some of the dairies in the district, “as the arrangements with regard to the cow byres are disgustingly dirty. The byres ought to be kept thoroughly clean, and each animal should have a sufficiency of pure air and daylight, whereas as

a rule they have little of the former and none of the latter." Milking cows in particular, should be kept clean and even groomed, but little is done for them, the only bedding they have being their own excreta, a certain amount of which must of necessity get into the milk at times. Dairy-farms ought to be periodically inspected by some one authorized to see that the milk sold to customers is in no way contaminated.

BREDBURY AND ROMILEY.

Urban District.

Medical Officer of Health—DR. F. CANT.

Population at Census, 1891—5821.

Estimated Population in middle of 1896—6628.

Area in Acres—3725.

Birth-rate per 1000 living—23·3.

Death-rate per 1000 living—13·8.

Death-rate from seven principal Zymotic Diseases—1·2.

Deaths under one year to 1000 births—101.

Bredbury (including Woodley, Hatherlow, Castle Hill and Bredbury Green) has an area of 2536 acres, and the population at the Census was 3901. Romiley (including Greave) has an area of 1189 acres, and the population at the Census was 1920. The estimated population of Bredbury is 4446, and the estimated population of Romiley is 2182.

In Bredbury there were 105 births and 64 deaths (excluding 2 not belonging to the district) registered, and there were 23 cases of infectious disease notified, of which 1 was removed to hospital.

In Romiley there were 53 births and 28 deaths (excluding 1 not belonging to the district) registered; and there were 9 cases of infectious disease notified, of which 2 were removed to hospital.

In Bredbury, the birth-rate was 23·6, and the death-rate was 14·3. In Romiley, the birth-rate was 24·2, and the death-rate was 12·8.

Infectious Disease.—The cases notified in Bredbury, were as follows:—13 scarlatina, 3 diphtheria, 1 membranous croup, 3 typhoid fever, and 3 erysipelas. The cases notified in Romiley were as follows:—3 scarlatina, 4 diphtheria, 1 typhoid fever, and 1 puerperal fever. Three cases of scarlatina were removed to the Hyde Hospital, all of which recovered.

The 64 deaths recorded for Bredbury, include 4 from the chief zymotic diseases, viz: 1 diphtheria, 1 erysipelas, and 2 measles. There were also 6 deaths from phthisis, 18 from bronchitis or pneumonia, and 3 from heart disease.

The 28 deaths recorded for Romiley, include 5 from the chief zymotic diseases, viz :—1 diphtheria, 1 typhoid fever, 2 whooping-cough, and 1 diarrhoea. There was 1 death from puerperal fever, 1 from rheumatic fever, 1 from phthisis and there were 4 deaths from bronchitis or pneumonia, and 3 from heart disease.

In Bredbury, the death-rate from the seven principal zymotic diseases, was 0·6, and in Romiley, the corresponding death-rate was 2·2.

Measles and Scarlatina.—Measles was epidemic at the end of the year 1895, but in January, 1896, there was a sensible diminution in the number of cases coming to the knowledge of the Authority. In February and March, several cases occurred in a neighbouring township—Gee Cross, and in March, cases of both diseases were reported near the boundary, in the village of Woodley, which it is believed were imported. No effort was spared to isolate these and other cases which occurred, to keep the children belonging to infected houses from Day and Sunday Schools, and to disinfect houses and bedding after the recovery of the patients.

Typhoid Fever.—This disease, also, was imported into the district. In August the child of a patient who was suffering from typhoid fever at Oldham was sent to Bredbury. It sickened as soon as it arrived, and was shortly notified as a typhoid fever case.

Whooping-cough.—In December whooping-cough appeared at Romiley and in the adjacent part of Bredbury, but the source of infection could not be traced.

Cases of measles and whooping-cough were reported to the Authority by teachers and parents.

Isolation Hospital accommodation.—This subject has been considered by the District Council. As, however, the arrangement with Hyde Hospital has been found to work in a satisfactory manner no further action was deemed necessary.

Water-supply.—On the whole this has been satisfactory, the only fault being that pressure has not been sufficient to maintain a constant supply in the higher parts of Woodley. The District Council have under consideration reports dealing with the better supply of these parts.

The town-mains have been connected to 31 houses during the year, some of which previously had to depend on pumps and wells.

The water-mains are flushed to keep them clear of sediment once a month, and 10,000 gallons of water are used for this purpose. This is run into the nearest sewers and helps to cleanse them.

Dairies, &c.—The dairies and cowsheds in the district have been inspected and reported on quarterly. One cowshed has been given up and closed, another has been much improved.

Slaughter-houses.—These are generally visited once a month, and the Inspector reports that they are kept cleaner than they used to be. The Medical Officer of Health has many times examined the premises with the Inspector, and suggestions for improvements have been made and carried out. A previously unregistered slaughter-house at Castle Hill has been much improved and registered. In February it was found necessary to prosecute a cattle dealer for using an old cart-shed as a slaughter-house, and upon his promising in Court that the shed should not be used again, he was fined only 10s. and costs. An application for a slaughter-house license for premises under the same roof as a row of cottages, was refused. A butcher, whose application for a license has been several times refused, has sent in building plans for the erection of a small brick slaughter-house in accordance with the recommendations of the Local Government Board.

Sewering and Sewage Disposal.—Considerable progress has been made during the year under this heading. Eighty houses have been connected with the main sewer in Romiley, and the length between Hatherlow and Otterspool Bridge has been proceeded with by the laying of a (18 inch) sewer 625 yards long and a (15 inch) sewer 903 yards long, with the required manholes, overflow and flushing arrangements. A branch sewer, 176 yards long, has been laid in Guywood Lane, and the contract for a sewer, 234 yards long, in Church Lane, has been let. Plans have been approved for the sewerage of the higher parts of Woodley, and advertisements issued for tenders for the work.

The Council have approved plans for out-fall works at Otterspool Bridge, and these are now in course of construction. The land has been found sufficient for dealing with all the sewage of the district. The Council has applied for a Provisional Order to erect a pumping-station at Bredbury to pass the sewage on from there to Otterspool.

Nuisance Abatement.—Throughout the year constant attention has been paid to this. The Inspector reports that he has served 64 notices for the abatement of nuisances, of which 57 have been satisfactorily attended to. Seven were still in hand at the end of the year. Houses requiring disinfecting were disinfected by him. A number of ash-pits (25 in all) were found to be faulty and these have been re-constructed. Only one case of overcrowding was discovered, and this on notice being sent was discontinued.

Smoke Nuisances.—Complaints have been made from time to time of excessive smoke issuing from factory chimneys,

and also from cottage chimneys. Accordingly notices were sent round cautioning all whom it may concern that prosecution will follow this offence.

Refuse Removal.—The work of removing nightsoil and ashes is carried out by a contractor employed by the District Council. It is satisfactorily done.

New Houses and Bye-laws.—Building operations have been active during the year. In Bredbury 35 new houses have been erected, and in Romiley 29 new houses have been erected. The bye-laws for the district have been under revision, and when finished will be submitted to the Local Government Board for confirmation.

The Public Health Acts Amendment Act, 1890.—This Act has been adopted by the District Council, and came in force on January 1st, 1897.

BROMBOROUGH,

Urban District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—1662.

Estimated Population in middle of 1896—1826.

Area in Acres—1616.

Birth-rate per 1000 living—20.8.

Death rate per 1000 living—8.2.

Death-rate from seven principal Zymotic Diseases—0.5.

Deaths under one year to 1000 births—158.

The area of this district, including Bromboro' Pool, was (according to the Census) 1555 acres. Recently 61 acres were taken from Poulton-cum-Spital, in the Wirral Rural District, and added to Bromborough. The area of the Urban District is therefore at present 1616 acres.

In 1896 the births registered in the district numbered 38, and the deaths numbered 15. The birth-rate is 3.2 below the mean birth-rate in 1892-95, and the death-rate is 2.9 below the mean death-rate in 1892-95. The proportion of deaths among infants is high for this district.

The deaths include 1 from diarrhoea, 2 from phthisis, 3 from bronchitis or pneumonia, and one from heart disease.

Nine cases of infectious disease were notified, viz. : 6 scarlatina, 1 diphtheria, 1 typhoid fever, and 1 erysipelas. All the scarlatina cases were removed, 4 to the Hospital at Spital and 2 to the Pool Works Hospital. The scarlatina cases occurred in February, May, and December, and in different parts of the district. All the infectious cases were investigated and disinfection carried out by the Inspector.

The Medical Officer of Health has visited the district from time to time, and in July made a general inspection of the district and reported thereon for the guidance of the Council.

The village of Bromborough is sewered throughout, and the sewer is flushed weekly. Many of the privies have been converted into water-closets, and the rest are in good structural condition. The Council contract for the removal of ashpit refuse.

At the Pool Works village all the houses have water-closets, which, with the sewers, are maintained in good order by the Pool Works Company.

The houses and sanitary arrangements at the Magazines village, overhauled lately, are in good condition.

The numerous large houses and mansions scattered over the district only occasionally require the intervention of the Council.

The district is supplied with very good water from the West Cheshire Water Works.

Mr. Gittins, the Inspector, makes a very complete and satisfactory Report, according to which 30 nuisances were abated during the year. He makes a house-to-house inspection of the district at regular intervals. An asphyxiator has been obtained for testing drains, and has already proved useful. No case of overcrowding came to the knowledge of the Inspector.

There are 8 registered milk sellers in the district. Their premises are lime-washed twice a year, and are all in fair order. There are also 2 bakehouses.

At the Pool Works village there is an Isolation Hospital, belonging to and maintained by the Pool Works Company. The rest of the district is contributory to the Wirral Joint Hospital District, and thus has excellent accommodation for infectious cases.

BUGLAWTON.

Urban District.

Medical Officer of Health—DR. P. M. DAVIDSON.

Population at Census, 1891—1382.

Estimated Population in middle of 1896—1490.

Area in Acres—2911.

Birth-rate per 1000 living—24.1.

Death-rate per 1000 living—13.4.

Death-rate from seven principal Zymotic Diseases—0.

Deaths under one year to 1000 births—111.

During 1896, the number of births registered was 36, and the number of deaths registered (including one belonging to the district, which took place in the Union Workhouse) was 20.

The birth-rate is 6.2 below the mean birth-rate in the four years 1892-95, and the death-rate is 3.6 below the mean death-rate in the same four years. The proportion of deaths among infants is smaller than in recent years.

Zymotic Diseases.—The following cases of zymotic diseases came to the knowledge of the Medical Officer of Health:—4 scarlatina, 7 measles, and a considerable number of cases of whooping-cough. There was no death. It must have been long (if ever) since a year passed without a death from zymotic disease.

Scarlatina.—One of the cases of scarlatina occurred near Cloudside, 1 in Key Green, 1 in Savannah Street, and 1 in Dane Row. Children from infected houses were kept from school, and as far as possible from coming into contact with other children; and their houses were disinfected before they were permitted to return to school.

Whooping-cough became prevalent in October, and continued so up to the end of the year. The disease was of a mild type.

Water-supply.—Most of the inhabitants of the district have availed themselves of the new water-supply, which has proved ample for the requirements of all. Complaints of want of water, formerly so common, are no longer made.

Sanitary Work.—The sanitary work of the district is well attended to. The ash-pits and privies have been regularly emptied and kept in good order.

The Medical Officer of Health inspected the whole district several times in the course of the year.

CHEADLE AND GATLEY.

Urban District.

Medical Officer of Health—DR. J. H. GODSON.

Population at Census, 1891—7782.

Estimated Population in middle of 1896—8505.

Area in Acres—5812.

Birth-rate per 1000 living—23.4.

Death-rate per 1000 living—15.7.

Death-rate from seven principal Zymotic Diseases—0.9.

Deaths under one year to 1000 births—140.

This Urban District was constituted by a Local Government Board Order, which came into operation in August, 1886. It was formed by uniting Stockport Etchells (including Gatley) with part of Cheadle (including Cheadle Hulme, Outwood, and part of the former parishes of Cheadle Bulkeley and Cheadle

Moseley). The area and population at Census of these two portions of the district are as follows:—

	Area in Acres.	Population at Census.
Stockport Etchells...	1572	1444
Part of Cheadle.....	4240	6808

From the population of Stockport Etchells should be deducted 156 enumerated in the Barnes Convalescent Hospital, and 314 enumerated in the Royal Lunatic Asylum, thus making the population of Stockport Etchells at the time of the Census 974.

In 1896, the number of births registered in the whole district was 199, and the number of deaths registered in the whole district (exclusive of those in the Convalescent Hospital and Lunatic Asylum) was 134. The birth-rate was 2·6 below the mean birth-rate in 1892-95, and the death-rate was 1·5 above the mean death-rate in 1892-95.

The number of deaths from zymotic diseases was 8, viz. :— 1 scarlatina, 2 typhoid fever, 3 whooping-cough, and 2 diarrhoea. There were 15 cases of phthisis, 38 cases of bronchitis or pneumonia, and 13 cases of heart disease.

The district is mainly agricultural and residential. Last year, as compared with previous years, a large number of villa residences was built in Cheadle Hulme, and there was also a large increase in the number of cottages built and being built in Cheadle, in consequence of the additions to the Printworks, resulting in a great increase in the number of hands employed. There have been no fresh trades introduced into the district. The health of the operatives is good.

Infectious Disease Notified.—During 1896 there were 36 cases of infectious disease notified (not reckoning those which occurred in Institutions) viz. :—21 scarlatina, 12 typhoid fever, and 3 erysipelas. None of these cases were removed. One case of scarlatina and 1 of erysipelas occurred in the Convalescent Hospital, and both were transferred to the Monsall Hospital, where they recovered. At the Warehousemen and Clerks' Schools there were 5 cases of scarlatina, which were isolated in the School Sanitorium, and recovered. There was no case of infectious disease at the Asylum.

As soon as each case was notified to the Medical Officer of Health, he at once visited the house where the case was, and with the Medical Practitioner in attendance and the help of the Inspector, took all possible precautions to prevent the spread of infection. These precautions were so far successful that in no case did the disease spread directly to other houses. The fact that in 1896 there were less than half the number of cases there were in 1895 seems due to the greater care taken by the parents. It has been the custom to have infected rooms fumigated with sulphur after the termination of each case. This the Medical Officer of Health reports has been fairly satisfactory, but he is

of opinion that the bedding, &c. should in every case be disinfected by steam.

Scarlatina.—This disease was, on the whole, of a mild type, there being but one fatal case. The cases were distributed over the district—there being 10 in Cheadle, 3 in Cheadle Hulme, 4 in Adswood, and 4 in Cheadle Heath. Of the 10 cases in Cheadle 4 became infected outside the district. In every one of the cases which occurred in Adswood and Cheadle Heath, the disease was contracted outside the district. The Cheadle Hulme cases and 6 of the Cheadle cases were sporadic, and the origin of the disease could not be ascertained. The cases at the Warehousemen and Clerks' Schools were due to infection taken at Chorlton-cum-Hardy.

Typhoid Fever.—Of the 12 cases notified, 5 occurred in one family and 3 in another. In the family where 5 cases occurred there had been a previous case, which was thought to have been caused by some of the food supply coming from a house infected with typhoid fever. Samples of water from the two wells supplying this house were analysed. The report of the Analyst showed that one sample was good, and that the other was a second-class water requiring filtering. The well yielding the second-class water was ordered to be closed. In the family where 3 cases occurred the patients contracted the disease while on a visit to Dublin. Out of the remaining 4 cases, 3 were infected outside the district; the fourth was that of a patient who worked in Stockport, and lived in a row of houses the drains of which discharged into a contiguous open channel.

Erysipelas.—The 3 cases notified were of a very mild type. In 2 the disease was traumatic, following poisoned wounds.

Sore Throat.—Though no case of diphtheria or croup was notified, tonsillitis of various forms was very prevalent during the autumn.

Measles, Mumps and Chicken-pox were prevalent in the district during the first half of the year, especially in Cheadle Heath and Gatley. Owing to the prevalence of these diseases, it was found necessary to close the schools for a short time.

Whooping-cough was prevalent at the beginning of the year, and was the registered cause of three deaths.

Influenza.—Only a few cases of influenza occurred and these were of a mild type.

Hospital Accommodation required.—The remarks made in previous Reports as to the hospital accommodation needed for infectious cases, still apply. The Hyde Corporation consent to receive cases of small-pox into their hospital so far as

their accommodation will allow ; but there is no arrangement at all for the isolation of other cases of infectious disease. The Barnes Convalescent Hospital and the Lunatic Asylum, by agreement, send their infectious cases to the Monsall Hospital ; and the Warehousemen and Clerks' Schools have their own Sanitorium. The subject is under consideration.

Water-supply.—The supply from the Stockport Water Works is sufficient for the needs of the district, however during the summer the water supplied was quite unfit for domestic use owing to its muddy character. Several complaints being received, the Clerk wrote to the Company, who promised to remedy what was complained of, but the muddiness of the water continued for a long time.

Several wells supplying houses at a distance from the mains have, during the year, been cleansed, repaired, and covered. Samples from wells are taken from time to time for analysis, and where the Analyst reports that the sample is only a second-class water and ought to be filtered, the well is ordered to be closed, and Stockport water supplied if possible.

New Houses.—During the year 50 dwelling-houses have been built and occupied. Most of them are cottages. The requirements of the bye-laws have been complied with in every house

Schools.—The Medical Officer of Health inspected the elementary schools and generally found the sanitary arrangements satisfactory. In one case the latrines were not kept clean, but this has since been attended to. The playgrounds of two schools were noticed to be wet and partly under water after rain, and these have now been re-drained.

Main Drainage and Outfall Works.—The outfall works were completed and opened in March. Since then they have been in regular use. The effluent, which has been examined from time to time, has proved most satisfactory. Arrangements have been made whereby the sewage may be turned on the surrounding land so as to give the filters a rest. It is proposed to do this for about three months in the year, provided the land will take the sewage for that time. One portion of the main drainage scheme is still unfinished.

Eight streets have been seweried during the year, and the houses abutting on them connected with the sewers.

Waste-water Closets.—Many privies have been replaced by waste water closets. These, when legitimately used, continue to work satisfactorily ; but in many instances they are abused, people putting into them various kinds of rubbish.

Dairies and Cow-sheds.—These have been visited from time to time by the Medical Officer of Health and Inspector. There are in all 50. They are well kept and clean.

Bakehouse.—The one public bakehouse in the district was inspected and found clean and well ventilated.

Slaughter-houses are still unlicensed. There are 6 in the district. They were all visited by the Medical Officer of Health and Inspector, and appear fairly well kept and clean. In one case alterations suggested two years ago and ordered by the District Council to be done, had not been carried out.

No unwholesome food, as far as is known, has been exposed for sale in the district.

There are no common lodging-houses in the district.

Inspector's Report.—The Inspector reports that, during the year, there were but 12 complaints (exclusive of those in respect of house refuse removal) and that 1150 houses and premises were inspected. Forty-nine orders were issued requiring sanitary amendment of houses, &c., 2 houses were cleansed, repaired and whitewashed and 13 were disinfected. In 65 houses the drains were repaired, cleansed, trapped, &c., and in 78 the drains were ventilated. Twenty-five privies or water-closets were repaired and 18 new ones were provided, 9 dust-bins were repaired and 20 new ones were provided. Seventeen waste-pipes were disconnected. Seven animals, so kept as to be a nuisance, were removed; and 9 accumulations of dung, &c., were removed.

The emptying of ashpits, &c., is supervised. The number of loads of refuse removed during the year was 2205. Many complaints were made of effluvium nuisance from ashpits. This nuisance would be abated to a great extent if occupiers of houses would be more careful what they put in their ashpits and would never throw slop water in them.

The Sale of Food and Drugs Acts.—Samples of articles of food exposed for sale were taken and submitted for analysis. The Analyst's report was in every instance satisfactory.

Cemetery.—Negotiations for the purchase of a suitable plot of land for a cemetery are still in progress.

DUNKINFIELD.

Urban District.

Medical Officer of Health—DR. J. R. S. PARK.

Population at Census, 1891—17408.

Estimated Population in middle of 1896—19000.

Area in Acres—1412.

Birth-rate per 1000 living—31.1.

Death-rate per 1000 living—18.6.

Death-rate from seven principal Zymotic Diseases—2.2.

Deaths under one year to 1000 births—187.

This Urban District contains only a part of the civil parish of Dukinfield, the remainder being part of the Municipal Borough of Stalybridge.

In 1896, the number of births registered was 592, and the number of deaths registered was 355. Of the births 289 were males and 303 were females. Of the deaths 177 were males and 178 were females. The birth-rate was 0·5 above the mean birth-rate in the four years 1892-95, and the death-rate 2·5 below the mean death-rate in the four years 1892-95. The birth-rate in 1896 was 30·3 in the first quarter, 31·8 in the second, 30·3 in the third, and 32·2 in the fourth. The death-rate in 1896 was 20·7 in the first quarter, 15·3 in the second, 17·4 in the third, and 21·1 in the fourth.

The number of illegitimate births was 27. The number of deaths of infants under one year old was 110. The proportion of infants to each 1,000 births was 187 in 1896; it was 224 in the four years 1892-5.

The number of deaths ascribed to the seven principal zymotic diseases was 42, viz:—1 measles, 10 scarlatina, 3 diphtheria and membranous croup, 13 whooping-cough, 4 typhoid fever, and 11 diarrhoea. The death-rate of the seven principal zymotic diseases, was 0·1 below the corresponding mean death-rate in 1892-95.

Cases of Infectious Disease notified.—During 1896. the number of cases of infectious disease notified was 176, viz: 139 scarlatina, 5 diphtheria and membranous croup, 20 typhoid fever, 1 puerperal fever, and 11 erysipelas. Twenty-three were notified in the first quarter, 24 in the second, 41 in the third, and 88 in the fourth.

The Infectious Disease (Notification Act) was adopted in November, 1892. The number of cases notified in 1893, was 126, the number notified in 1894 was 118, and the number notified in 1895 was 137.

Scarlatina.—In the first 4 months of the year, there were 24 cases and 1 death, in the next 4 months there were 15 cases and 2 deaths, and in the last 4 months there were 100 cases and 7 deaths. In some houses 2, 3 and 4 cases were notified, and in one instance there were 6 cases in one house. Isolation at home as far as practicable was encouraged, and in some cases carried out effectively.

Diphtheria and Croup are by some authorities regarded as practically the same disease, and they are usually classed together. There were 2 cases (1 fatal) notified in the third quarter, and there were 3 cases (2 fatal) notified in the fourth quarter. The cases were of a serious type.

Typhoid Fever.—There were 4 cases notified in the first quarter, 2 in the second, 1 in the third, and 13 in the fourth. The 4 deaths recorded, are equal to a death-rate of 0·21.

Puerperal Fever.—It is remarkable that although there were 3 deaths from this disease, only 1 case was notified, indicating an unwillingness on the part of medical men to notify. This is to be regretted, as it is most important that the source of puerperal fever should be carefully traced, and proper precautions taken.

Diarrhoea was the cause of 11 deaths in 1896. This number compares favourably with 18 deaths from this cause in 1895, and $17\frac{3}{4}$, the mean of the number in the four years 1892-95. All the 11 deaths were of children under five years old. One occurred in June, the remainder in the third quarter.

Action taken to prevent spread of Infection.—In all cases notified in 1896 as in previous years, the sick-room and things therein are fumigated with burning sulphur, as soon as recovery, or death takes place. Disinfectants are also supplied (in solution and powder) free of charge by the Authority. “Although these so called disinfectants,” remarks the Medical Officer of Health, “serve a useful purpose, they should not take the place of free ventilation and cleanliness: it would be well if, after every infectious case, the rooms were thoroughly cleaned and whitewashed.” A Sub-Committee was appointed, during 1896, to draw up regulations with the object of preventing the spread of infectious diseases—particularly scarlatina. These regulations are shortly to be printed, and distributed as infectious disease is reported.

Notification to Schools and Free Library.—As soon as each case is notified, the Inspector at once reports it to the Master or Mistress of the School where the children from the infected house attend. A similar communication is made to the Librarian at the Free Library, so that no book may be lent out to those living in an infected house. The use of an apparatus has been suggested for disinfecting books belonging to the Library by means of carbolic acid vapour, but such information as the Medical Officer of Health has been able to get “seems to show that the only way to disinfect books satisfactorily is to destroy them.”

The Infectious Disease (Prevention) Act, 1890.—This Act will shortly come into force in the district, sections 9, 10 and 12 excepted. It is believed that the Act will be useful in preventing the spread of infection, for it gives increased control over the milk supply, increased powers of disinfection, forbids the throwing of infectious rubbish into ash-pits, &c.

A Steam Disinfector required.—During the year a deputation from the Sanitary Committee visited Oldham to see the steam disinfecter in use there. It seemed to give great satisfaction to the local Authority, and it is recommended that a similar apparatus be provided for Dukinfield.

Disinfecting Baths required.—The Medical Officer of Health also recommends that Baths should be provided for disinfecting those who have come in contact with infectious cases.

Isolation Hospital provision.—This matter has received the serious consideration of the Sanitary Committee. The accommodation arranged for consists of two beds at the Hyde Hospital for which a sum of £22 per annum is paid. In addition there is a charge of £2 2s. per case for medical attendance in hospital and 1/3 per day for food. Only cases of small-pox are sent, so there is no provision whatever for cases of infectious disease other than small-pox.

Influenza.—Since the epidemic of a few years ago, sporadic cases of influenza occur from time to time. There was one death recorded from this disease in 1896. There were two deaths in 1895.

Phthisis is responsible for 28 deaths in 1896. This is exactly the average number in the four years 1892-95, and is equal to a death-rate of 1.31 per 1000 living.

The Medical Officer of Health writes: “there is no doubt phthisis is an infectious disease, and it is important that the patient should be as far as possible isolated from the other members of the household. In my own experience I know of cases where the husband has caught this disease from the wife, and *vice versa*, by sleeping in the same bed. The employment of work-people in the cotton mills (particularly in the card-rooms), in coal-pits and in spindle-works, is no doubt favourable to the development of phthisis and other chest diseases.”

New Bye-Laws.—In 1894 a committee was appointed to arrange bye laws up to date, those in use in the district having been adopted in 1857. Although the bye-laws have been drafted and sent to the Local Government Board for approval, “they are, for some reason or other, not in use at present.”

The Private Street Works Act, 1892.—This Act was adopted by the District Council in October, 1896.

Water-supply.—The Dukinfield Urban District Council are joint owners with the Corporations of Ashton-under-Lyne and Stalybridge of the district Waterworks. The water is gathered from the springs and streams in the Swineshaw Valley. It is pure and abundant. The consumption of water in Dukinfield, during 1896, was as follows:—

Gross supply	...	...	122,000,000	gallons
For trade purposes	...	...	15,413,700	“
Net supply	...	...	106,586,300	“

The gross daily supply was equal to 17.59 gallons per head, and the net daily supply was equal to 15.37 per head. In the five years 1891-95, the average gross daily supply was 20.26 gallons

per head, and the average net daily supply was equal to 17.92 gallons per head.

Disposal of Excreta and Refuse.—The sanitary accommodation provided for houses in the district is of three kinds—ashpit privies, pails and w.c.'s. As regards the combination of privy and ashpit, it is well known that storing refuse in receptacles in close proximity to inhabited houses is an insanitary practice, yet here is all the filth and rubbish of the household mixed up with the excreta stored close to the house. As to pails, if they could be emptied every day they might pass, but this is too expensive and impracticable. When practicable the water-carriage system is undoubtedly the best method of getting rid of excreta. It would be an advantage to convert all the ashpit-privies in Dukinfield into water-closets and small dry ashpits. The Sanitary Committee recommend that in all new property water-closets should be provided, if possible. The most economical form is the waste-water closet. These closets, however, require care and supervision to keep them in order. The Medical Officer of Health suggests that when the water-carriage system becomes general in the district, a man should be employed to go round regularly and examine the closets and report on their condition.

At present the greater part of the excreta from the pails is taken to the District Council's sewage farm, but a small portion is taken to local farmers. The contents of the ashpit-privies till lately were tipped on the sewage farm between 11 p.m. and 6 a.m., but owing to complaints of an offensive smell on the tip road this stuff is now tipped in the dingle only. The closets are at present flushed into the sewers, and then into the river. In a short time all the sewage will be treated, at Bradley Hurst farm, by precipitation and filtration. The farm consists of 60 acres of land in a most favourable position as an outlet to the sewage of the district.

The district is regularly and systematically scavenged. The street sweepings are conveyed to Bradley Hurst, and all refuse from shops, ashpits, &c., is removed to the tip at the farm.

If it is intended to continue tipping at the Bradley Hurst tip, the Medical Officer of Health recommends "that a culvert be built over the stream called Johnson Brook, which enters the farm at this point." When the water-carriage is completed, it would be well to cease tipping here, and destroy the refuse by means of a "destructor."

Drains and Sewers.—The district is efficiently and extensively sewered, as planned by the late Mr. Vawser, having Bradley Hurst as an outlet. The sewers are ventilated at the man-holes. House drainage is also attended to, but there are still some drains not trapped, and a few sink waste-pipes not disconnected.

Owing to the contour of the district enabling sewers to be constructed with a good fall, in the greater part of the township flushing of sewers and drains is unnecessary. However, the Medical Officer of Health recommends that the sewer in Higher King Street should be regularly flushed in dry weather, as complaints of foul smells from the ventilators have been received.

A Polluted River—Dukinfield is situated on the left bank of the River Tame, a tributary of the River Mersey, and the Tame is at present nothing more nor less than an open sewer, into which flows, in addition to the sewage of the district, the liquid refuse from the different industries which are carried on, on both sides of the river. The most important works are cotton mills, but there are also iron works, bleaching and dye works, and dry-soap works. There is further coal mining (giving employment to about 1,000 men and boys) in the district, and the manufacture of rope and twine is carried on in the neighbourhood. The waste liquor from some of these works adds considerably to the pollution of the river.

Joint Scheme for dealing with Sewage.—The Corporation of Stalybridge have joined with the Urban District Councils of Dukinfield and Audenshaw to form a joint scheme for taking the sewage of the districts to Bradley Hurst and treating it there. Messrs. John Newton and Son have completed plans for the main trunk sewer and for the works, and submitted them for the approval of the Local Government Board; and a Local Inquiry was held by an Inspector, on behalf of the Board, last June. The Local Government Board has been asked to sanction the borrowing of £58,300, and the construction of the works is delayed till the sanction is obtained.

Plantation Farm, in the Dukinfield Urban District, has been purchased by the Corporation of Ashton-under-Lyne for the disposal of its sewage.

There is no doubt that as the result of these schemes for dealing with the local sewage at properly constructed outfall works, the condition of the Tame will be greatly improved.

Report of Inspector.—The Sanitary Inspector, Mr. J. Summerfield, furnishes a list of the many nuisances dealt with, including 57 defective drains put in order, 104 poultry (so kept as to be a nuisance) removed, 2 pig-sties removed, 58 dilapidated and defective ash pits improved, and 56 miscellaneous nuisances abated. Only one smoke nuisance was dealt with. Some practical means of regulating the quantity of dense smoke to be allowed from mill chimneys is still much needed. The Inspector also superintends the scavenging. The number of loads of street-sweepings removed was 1,208; the number of loads of dry ashes was 992; the number of loads of refuse from ashpit privies was 5,359; and the number of barrels of excreta removed from cesspools was 705.

In three instances prosecutions were instituted for the non-abatement of nuisances after notice served.

There are no offensive trades carried on in the district, and there are no common lodging-houses or tenement houses.

There are several cellar dwellings which are inhabited, and very few back-to-back houses.

Canal Boats.—There is about a mile of Peak Forest Canal running through the district. The Inspector paid 12 visits to this, and inspected 2 canal boats. The boats were found in good order.

The canal seems to be a convenient place for drowning dogs. During 1896 the Inspector removed 147 carcases of these animals.

Dairies, Cow-sheds, and Milk-shops are periodically inspected. There are 15 in the district, and 22 visits of inspection were made during the year. The premises, fixtures, milk-vessels, etc., were found scrupulously clean; and the lighting, ventilation, drainage, and water-supply were satisfactory.

Samples of milk and other food were submitted to the County Analyst, and in some instances the samples were reported to be adulterated. Three prosecutions were undertaken for adulteration.

Bakehouses and Slaughter-houses are also regularly inspected and reported on. The bakehouses are kept in good sanitary condition. There are 15 slaughter-houses, 9 of which are being used at present. Twenty visits of inspection were made to them during the year. As a rule, they are kept clean, but many have not sufficient air-space or light, and are situated in objectionable places.

The Medical Officer of Health suggests that it would be an advantage to have a public abattoir.

Vaccination.—The following return is submitted respecting the vaccination of children whose births were registered in the district in 1896. The return is dated February 28th, 1897:—

Successfully vaccinated	...	...	...	...	102
Insusceptible of vaccination	...	...	...	...	0
Died unvaccinated	...	...	...	...	83
Postponed by medical certificate	...	...	...	...	2
Removed from the district	...	...	...	...	6
Outstanding	...	...	...	...	399
Births registered					592

In a return submitted in the Annual Report for 1895, it appeared that out of 548 births 110 had been successfully vaccinated.

Open Spaces and Play-grounds.—A committee was appointed two years ago to negotiate for the purchase of land as recreation grounds, but up to the present time their efforts have not been successful. However, the District Council, having some land to spare, have given it to the public as a recreation ground. The land consists of 12,383 square yards, and is the upper part of the market ground. It has been enclosed, and it is understood that shortly swings will be erected there.

Cemetery.—The Local Authority are joint owners with the Ashton under-Lyne Corporation of a large cemetery, situated in Dukinfield, which is sufficient, not only for present needs, but for the requirements of many years to come.

HOLLINGWORTH.

Urban District.

Medical Officer of Health—DR. W. E. S. BENNETT.

Population at Census 1891—2895.

Estimated Population in middle of 1896—2895.

Area in Acres—2086.

Birth-rate per 1000 living—27.9.

Death rate per 1000 living—18.6.

Death-rate from seven principal Zymotic Diseases—1.3.

Deaths under one year to 1000 births—160.

In 1896, the number of births registered in the district was 81, and the number of deaths registered in the district was 54. The birth-rate was 1.2 below the mean birth-rate in 1892-95, and the death-rate was 1.0 above the mean death-rate in 1892-85.

One death was due to typhoid fever, 1 to erysipelas, 1 to whooping-cough, 2 deaths were due to diarrhoea, 2 to phthisis, 16 to bronchitis or pneumonia, and 6 to heart-disease.

Infectious Disease Notified—Eleven cases of infectious disease were notified, viz.:—2 scarlatina, 6 diphtheria, 2 typhoid fever, and 1 erysipelas.

Scarlatina.—A case occurred in Wedneshough Green, in January, and was followed by a second in the same house. The origin of the earlier case could not be traced.

Diphtheria.—The 6 cases of this disease were all of a mild type. The first two cases were in Market Street, 1 being in March and 1 in May. The next case was in Hollingworth Hall Cottage, in July, and this was followed by 3 cases in Woolley Lane, in August. As regards the 3 earlier cases, sanitary defects were discovered on the premises. In Market Street were loose rubble drains passing under the houses. These

drains had been in use for many years before the drainage was diverted, and from them sewage had percolated into the foundation. They should have been removed and the polluted earth around them when the alterations were effected.

Typhoid Fever.—One case of this disease occurred in Spring Street in September and proved fatal; a second occurred in Market Street in December. The house in Spring Street where the patient died was found to be badly drained, and the defects discovered have since been remedied. The house in which the other case appeared was in a satisfactory condition, and it is thought that the patient probably contracted the disease at his place of employment.

Erysipelas.—The case of this disease occurred in Cross Street. No sanitary defects were found on the premises.

Water-supply and Milk.—The water-supply has been abundant and good throughout the year. There are no milk shops in the district, the milk being supplied from farms outside.

The water-supply at Woolley Bridge Farm, which was found to be contaminated by liquid manure getting in through defective pipes, has been put in order by relaying the pipes away from any probable source of pollution.

Inspection.—Periodical inspections have been made by the Medical Officer of Health and Inspector, most attention being given to parts most requiring it.

There is only one lodging-house and this is kept clean and in order. Slaughter-houses have been duly inspected.

There are no offensive trades carried on in the district or neighbourhood.

Sewering.—Reference was made in the last Annual Report to the main sewer laid through the Hollingworth portion of Mottram Moor, Market Street, Green Lane and Woolley Lane, and on to the outfall works in the Hague. Since this the laying of additional mains in Moorfield Street, Church Street, Wood Street, Spring Street and Cannon Street has been in abeyance owing to some engineering difficulties, which the Medical Officer of Health understands will shortly be overcome. When all the main sewers are laid and the house connections made, the sanitary condition of the district will undoubtedly be improved.

Nuisance Abatement.—The Inspector has attended to a large number of nuisances—defective or obstructed drains, filthy closets, overflowing middens, &c. Many sink waste-pipes and yard drains have been trapped, and some closets have been reconstructed and cesspools removed. However there is still room for improvement as regards sanitary fittings, &c., in various parts of the district.

HOOLE.

Urban District.

Medical Officer of Health} to March, 1896, DR. W. C. WATSON.
{ after March, 1896, DR. R. E. BURGES.

Population at Census, 1891—3329.

Estimated Population in middle of 1896—3329.

Area in Acres—331.

Birth-rate per 1000 living—29.1.

Death-rate per 1000 living—14.7.

Death-rate from seven principal Zymotic Diseases—4.8.

Deaths under one year to 1000 births—82.

This Urban District is only part of the Parish of Hoole; the remaining part (419 acres, and having a population of 174) forms part of the Chester Rural District.

The population of the Urban District was 3892 at the Census, but from this has been deducted 563, the population of the Chester Union Workhouse, which is situated in this district.

In 1896, the number of births registered in the district was 97, and the number of deaths registered in the district (excluding the deaths in the Workhouse not belonging to Hoole) was 49. The birth rate was 7.5 below the mean birth rate in 1892-95, and the death-rate was 2.2 below the mean death-rate in 1892-95.

Sixteen deaths were due to the principal zymotic diseases, viz: 10 diphtheria, 4 whooping-cough, 1 scarlatina, and 1 measles. The zymotic death-rate was 2.5 above the mean zymotic death-rate in 1892-95. There was also a death from influenza, and 5 deaths were ascribed to phthisis.

Infectious Disease Notified.—Sixty-eight cases of infectious disease were notified, viz: 8 scarlatina, 59 diphtheria, and 1 erysipelas. Of these 3 cases of scarlatina and 23 cases of diphtheria were removed to the Fever Hospital at Chester Infirmary.

Diphtheria.—Of the 59 cases of this disease notified 46 occurred in July and August. More of these cases would have been removed to the Fever Hospital had there been sufficient accommodation. The schools were closed during July and August for the holidays, so that it was not necessary to take any action in this respect.

Water-supply.—The supply in use is chiefly town's water; except at Piper's Ash, where the water is derived from wells or springs.

Milk-houses—The 10 milk-houses in the district have been periodically inspected.

Inspection—The district is regularly inspected by the Medical Officer and Inspector.

Nuisance Abatement.—The Inspector has served 65 notices for the abatement of nuisances, all of which have been duly attended to. Five privies have been converted into water-closets. Five others yet remain to be converted.

Refuse Removal.—The ashpits are regularly emptied by a contractor, and the drains looked after by the Inspector, being flushed from time to time and kept in order.

New Houses.—During the year 12 new houses have been erected under the supervision of the Surveyor.

HOYLAKE AND WEST KIRBY.

Urban District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—6545.

Estimated Population in middle of 1896—8515.

Area in Acres—2019.

Birth-rate per 1000 living—23.1.

Death-rate per 1000 living—15.4.

Death-rate from seven principal Zymotic Diseases—2.1.

Deaths under one year to 1000 biths—147.

The Urban District consists of West Kirby, Little Meols (including Hoylake and Hilbre Island*), Hoose, Great Meols, and part of Grange. The area and population at the date of the Census are given as follows :—

			Area in Acres.		Population at Census.
West Kirby	...	...	482	...	2441
Little Meols	...	..	711	...	1962
Hoose	...	...	108	...	1658
Great Meols	...	...	695	...	456
Part of Grange	...	...	23	...	28

The Urban District was created by an Order of the Cheshire County Council, which was confirmed by the Local Government Board, dated January 15th, 1891.

The portion of the Urban District now regarded as Hoylake is Little Meols, Hoose and Great Meols; the portion now regarded as West Kirby is West Kirby and part of Grange.

In 1896, the births registered in the district numbered 197; the deaths (including 5 deaths of persons belonging to the district and excluding 2 deaths of persons not belonging to the district) numbered 131. Of the deaths 70 were in Hoylake and 61 in West Kirby. The birth-rate is 1.1 below the mean

* This Island appears on the Ordnance Map as a detached part of the former civil parish of St. Oswald, now incorporated with that of Chester, but it is treated as a part of Little Meols owing to its having been rated to this parish for the maintenance of the poor.

birth-rate in 1892-95 ; and the death-rate is 0·6 above the mean death-rate in 1892-95. The Hoylake mortality includes 10 deaths from the principal zymotic diseases (1 diphtheria, 1 typhoid fever, 5 whooping-cough and 3 diarrhoea), 1 death from erysipelas, 5 deaths from phthisis, 8 from bronchitis or pneumonia, 6 from heart disease and 2 from influenza.

The West Kirby mortality includes 8 deaths from the principal zymotic diseases (1 scarlatina, 2 whooping-cough and 5 diarrhoea), 12 deaths from phthisis, 5 from bronchitis or pneumonia, 7 from heart disease and 1 death from influenza.

There were in all 95 cases of infectious disease notified—67 being in Hoylake, and 28 in West Kirby. The Hoylake cases were as follows :—46 scarlatina (of which 31 were removed to hospital), 6 diphtheria (of which 1 was removed to hospital), 6 typhoid fever (of which 2 were removed to hospital), 1 puerperal fever and 8 erysipelas. The West Kirby cases were as follows : 18 scarlatina (of which 14 were treated in hospital), 5 diphtheria (of which 2 were treated in hospital), 1 typhoid fever and 4 erysipelas.

It is important to note that although there were in all 64 cases of scarlatina, 11 cases of diphtheria and 7 cases of typhoid fever, there was only 1 death from each of these diseases.

The cases of scarlatina occurred at intervals throughout the year. Prompt removal to hospital or isolation at home prevented any material extension of the disease. The cases of typhoid fever were scattered. All the cases notified were duly investigated, and measures taken for the discovery and remedy of insanitary conditions, and for disinfection.

Measles and whooping-cough were very prevalent in the early months of the year ; on account of which the schools were closed for three weeks by the managers.

Many of the cases of infectious disease in this district may be looked upon as imported. This is largely owing to the free communication between the district and Liverpool and Birkenhead.

The Medical Officer of Health visited both Hoylake and West Kirby a number of times, investigating cases of infectious disease, and making general and special inspections of the district. He has advised the District Council and Surveyor and Inspector on various points of detail in connection therewith.

The district has an excellent supply of water from the West Kirby Water Works (deep wells).

The district is well sewered, and the sewers are flushed every week. No complaints have been received of effluvium nuisance therefrom. Meols Road has been sewered, and an Adam's lift has been installed here to automatically lift the sewage. Water-closets are universal in the new streets throughout the district, and in the older streets the privies have been mostly converted into water-closets.

Mr. Foster, Surveyor and Inspector, gives a complete and satisfactory report of the work done in his department. During the year, 46 nuisances have been abated, including one house closed as insanitary, one offensive privy converted into a water-closet, and one case of overcrowding. The ashpits are emptied every ten days, by the employés of the Council. The use of movable ashbins is being extended.

The milk-shops and dairies, and also the slaughter-houses have been inspected during the year, and found in order.

Twelve private streets have been made, including sewerage where required, under the Private Street Works Act, 1892.

Fifty-three houses have been built and occupied during the year, and 90 houses are in course of erection.

A Bill is being promoted in Parliament, for increasing the powers of the District Council, for improving the Hoyle Lake, &c. Another Bill is being promoted for electric lighting in the district.

KNUTSFORD.

Urban District.

Medical Officer of Health—DR. T. W. H. GARSTANG.

Population at Census, 1891—4643.

Estimated Population in middle of 1896—4891.

Area in Acres—1760.

Birth-rate per 1000 living—28.3.

Death-rate per 1000 living—17.8.

Death-rate from seven principal Zymotic Diseases—1.2.

Deaths under one year to 1000 births—165.

The population, as given above, is made up of the average number of inmates in the Workhouse during the year (235), the average number of persons in the Gaol during the year (346), and the estimated number of ordinary residents in the Township (4310). In making this estimate, the Medical Officer of Health had the help of the Assistant Overseer. The estimate used in the Report for 1895 appears to have been somewhat in excess.

In the Report for 1895, which was the first Annual Report on the Urban District of Knutsford, reference was made to "four questions of first rank," calling for the immediate consideration of the new Council. These were as follow :—

1. Cemetery.—Negotiations have been begun in connection with many sites, and though no final solution of this question of Cemetery provision has been come to, there is good hope that a satisfactory arrangement is not far off.

2. Sewage Disposal.—The effluent is examined from time to time by the Inspector of the Mersey and Irwell Joint

Committee. There has been distinct improvement during the year. Further modifications are in contemplation. The Medical Officer of Health has submitted for the consideration of the Council three suggestions, viz. :—(a) the construction of an additional settling-tank, (b) the enlargement of the filter bed, or (c) the diminution of the volume of sewage to be treated, by the diversion of the storm-water. He is of opinion that by one or other of these means a great improvement in the effluent would be effected, and considers that the last named is the simplest and cheapest.

3. Water-supply.—The Company supplying water to Knutsford have yielded to the public demand for a purer water, and are now boring for a new supply to be derived from the gravels and sandstone at a considerable depth, in quantity sufficient for the supply of the town. The use of water from the polluted stream will thus be altogether discontinued. By Christmas, 1896, the boring had reached a depth of 330 feet, and it is expected that water may be reached at any time after 450 feet is passed.

4. Isolation Hospital.—A joint application has been made to the Local Government Board for the formation of a Hospital District, to be called the Bucklow Joint Hospital District, on behalf of the Knutsford District Council and other District Councils. This Hospital District will be formed by a Provisional Order, and in due course hospital accommodation will be furnished. Several cases of infectious disease, which occurred during the year, would have been isolated in hospital had there been one. Although the Bucklow Council, by reason of the extent of their administrative area, will be most largely represented on the new Hospital Board, it will be on record to the credit of the Knutsford Council that it was their action in arranging a workable scheme with the Councils of Wilmslow and Alderley Edge, and securing a hospital site, that rendered it possible in the summer of 1896 for the large scheme to be got into working order (under pressure from the County Council) with such remarkable ease and rapidity.

The above four matters having been all satisfactorily advanced, attention is drawn to another important subject, viz.:

5. Sanitary Conveniences and Scavenging.—There are nearly 350 houses not fitted with water closets, that is more than one-third of the houses in the district. After allowing for out-lying houses not served by the sewers, there still remains far too large a number provided with some form of cesspool or privy; and many of these are old fashioned and ill-constructed. There must be, therefore, serious soil pollution, injurious to health, not to mention the nuisance caused by scavenging, attested by the number of complaints made by householders.

Births and Deaths.—During 1896, the number of births registered in this district was 129, of which 9 occurred in the Workhouse. Thus the birth-rate of the population (deducting the 346 persons in H.M. Prison) was 28.3, about $4\frac{1}{2}$ per 1000 living below the birth-rate in 1895. There were 8 illegitimate births in 1896, and ten in 1895. During 1896, the number of deaths registered in the district was 118, of which 45 occurred in the Workhouse and 3 in H.M. Prison. Forty-one of the whole number were of persons not belonging to the district. The Medical Officers of Health of districts to which these 41 deaths belonged were notified. The deaths belonging to Knutsford were therefore 77. The death-rate of the population (deducting the 581 persons in the Workhouse and H.M. Prison) was 17.8, about 3 per 1000 living above the death-rate of 1895.

Infantile Mortality.—Twenty of the 77 deaths were of infants under one year old, viz. :—7 convulsions, 5 debility, 5 premature birth, 2 diarrhoea, and 1 pneumonia. Sixteen of the 20 were under six months old at the time of death. Twenty deaths are equal to 165 per 1000 births belonging to the district.

Infectious Diseases.—Only 12 cases were notified during 1896, viz. :—5 scarlatina and 7 erysipelas. In 1895, 25 cases were notified, viz. :—19 scarlatina, 1 typhoid fever, and 5 erysipelas. The five cases of scarlatina occurred at different times and at different localities having no connection with each other. In four cases the disease was contracted outside the district. There was no death from notifiable disease.

Zymotic Mortality.—There were 3 deaths from whooping-cough—1 being in June, 1 in August, and 1 in September; those who died were 3 years old and under. There were also 3 deaths from diarrhoea—one was a man, aged 77 years, who died in February; and 2 were very young infants, who died respectively in July and November. The zymotic deaths, therefore, numbered 6 in 1896. They numbered only 2 in 1895.

Action taken to prevent spread of Infection.—The Medical Officer of Health has satisfied himself that, in the opinion of experts, sulphur fumigation is far inferior as a method of disinfection to spraying with a solution of perchloride of mercury. Accordingly, on August 4th, he recommended the adoption of this improved way of disinfecting rooms. The District Council have not yet sanctioned the purchase of the needful apparatus. For the disinfection of bedding, clothes, etc., which can only be satisfactorily disinfected by steam, there is no provision. It is probable that in course of time a steam disinfecter will be obtained by the Bucklow Joint Hospital Board, and placed at the service of any resident in the Hospital District.

On November 3rd, the District Council accepted the advice of the Medical Officer of Health to offer to disinfect after

death from phthisis. Even if in many cases the offer be refused, there will be a good effect from the Authority having given practical intimation that phthisis is infectious. Greater care in adopting proper hygienic measures will diminish the number of preventable cases of this common and fatal disease.

Water Analysis.—As almost the whole district is supplied by a Water Company, it is not often private supplies come under observation. However, during 1896, two samples were analysed. One proved good and the other bad. In the latter case, a notice was ordered to be served to close the well from which the sample came.

The Sanitary Inspector (Mr. Walter Downes) furnishes information on various matter coming under his supervision.

Common Lodging-houses (of which there are 2) have been frequently inspected and always found clean.

Schools have also been frequently inspected and found clean.

Slaughter-houses have been inspected, and found in good order.

Drains, Sewers and Outfall Works.—In a number of private houses, &c., the drains (many in a very bad state) have been put in thorough repair. The main sewers are working satisfactorily. Two new ventilating shafts have been built and corresponding man-holes closed. The King Street sewer has been extended 64 yards, and now sewers houses which formerly drained into the river. The sewer at the back of King Street has been cleansed. The sewers in Toft Road and Blackhill Lane require extension. The tanks at the outfall-works and filters are in good order. During the year 395 loads of sludge have been sold.

The advice given by the Inspector, in his Report for 1895, that the surface water from the two main streets should be diverted from the sewer, is in this Report withdrawn. The surface water insures the more efficient flushing of the outfall sewer, which is almost level.

The sanitary arrangements at the railway station have been greatly improved.

The Inspector reports that throughout the year the scavengers have done their work in a satisfactory manner.

LYMM.

Urban District.

Medical Officer of Health to March, 1896, the COUNTY
MEDICAL OFFICER.
after March, 1896, DR. W. W.
WILLIAMSON.

Population at Census, 1891—4995.

Estimated Population in middle of 1896—5600.

Area in Acres—4375.

Birth-rate per 1000 living—23.5.

Death-rate per 1000 living—14.4.

Death-rate from seven principal Zymotic Diseases—0.7.

Deaths under one year to 1000 births—151.

During 1896 the number of births registered in this district was 132, and the number of deaths registered in this district (including 5 belonging thereto, and excluding 2 occurring in the district but not belonging thereto) was 81. The birth-rate was 5 below the mean birth-rate in 1892-95, and the death-rate was 1.5 above the mean death-rate in 1892-95.

Infant Mortality.—Twenty of those who died were under 1 year old, this is equal to 151 per 1000 births. In the four years 1892-95, the proportion of deaths to the 1000 births was only 116. Eight out of the 20 only lived a few hours or a few days.

Causes of Death.—Four deaths were due to the principal zymotic diseases, viz. :—1 scarlatina, 2 typhoid fever, and 1 whooping-cough. One death was due to influenza, and 1 to rheumatic fever. Two deaths were due to phthisis, 14 to bronchitis or pneumonia, and 4 to heart disease.

Infectious Diseases notified.—Seventeen cases of infectious disease were notified, viz. :—12 scarlatina, and 5 typhoid fever.

Scarlatina was introduced into the district 10 times, yet owing to care and isolation there was not a single instance of its spreading. There was one death. In 1892 there were 24 cases notified and 2 deaths; in 1893 there were 10 cases notified and there was 1 death; in 1894 there were 11 cases notified and no deaths; and in 1895 there were 13 cases notified and no deaths.

Typhoid Fever.—That there were 5 cases of this disease and 2 deaths from it is to be regretted, for typhoid fever more than any other disease is preventible. With good water and efficient drainage it does not occur as an epidemic, but it is hardly ever absent from a district for long. According to all the highest authorities it is a fever arising from filth—people are infected by faecal matter in the air, in water or in milk. Hence the objectionableness of all cesspools and uncovered ash-pits as these saturate the soil with filth; and the importance

of regular and systematic emptying of all privies and ash-pits. That there are insanitary cesspools and ash-pits in this district must be admitted, and also that the emptying thereof is not as satisfactory as it should be. However, some improvements in respect of these matters are being made year by year.

In the seven years immediately preceding 1896, there have been 9 cases of typhoid fever in the district.

Proposed Isolation Hospital District.—The Lymm District Council has, with other District Councils, applied to the Local Government Board for the formation of a Hospital District.*

Inspector's Report.—Mr. Mort, the Sanitary Inspector reports that during the year he has made 256 general visits of inspection, and 16 visits with reference to infectious diseases and the disinfection of premises. The number of nuisances from defective drains abated was 24; and the number of nuisances from defective privies and ash-pits abated was 55. The number of statutory notices served for the abatement of nuisances was 12, 3 of which were outstanding at the end of the year.

The Inspector supervises the removal of refuse. There were 2477 emptyings effected of privies and ash-pits. The number of loads removed was 844.

There are no common lodging-houses in the district.

Six certificates were granted for the occupation of new houses.

Canal Boats.—During the year 51 boats were inspected. In two instances defects were noted and reported. These were rectified in due course.

MARPLE.

Urban District.

Medical Officer of Health—DR. A. F. KEYWORTH.

Population at Census, 1891—4844

Estimated Population in middle of 1896—5275.

Area in Acres—3053.

Birth-rate per 1000 living—22.7.

Death-rate per 1000 living—9.8.

Death-rate from seven principal Zymotic Diseases—0.3.

Deaths under one year to 1000 births—41.

This Urban District takes in Barns Fold, Hawk Green, Middlewood and Windlehurst.

In 1896, the number of births registered was 120, and the number of deaths registered (exclusive of 4 occurring within

* The District Council addressed a letter to the Local Government Board in 1897, withdrawing this application.

the district and not belonging thereto) was 52. The birth-rate is 0·2 below the mean birth-rate in 1892-95, and the death-rate is 5·3 below the mean death rate in 1892-95.

Five of the deaths in 1896, were of infants under one year old (a very small proportion), and 19 were of persons aged 65 years and upwards (a large proportion).

There being so satisfactory a record, year after year, at Marple, is doubtless in great part to be ascribed to the natural advantages the district possesses. It is situated on a slope with a S.W. aspect, there being 303 feet between the altitude of the site of All Saints' Church and the Marple Aqueduct, and there is good drainage of the subsoil to the streams and to the River Goyt. There is also some shelter from the hills of Ludworth and Cobden.

The number of deaths from zymotic diseases was 3, viz : 1 diphtheria, 1 erysipelas and 1 diarrhoea. There were 12 deaths from bronchitis or pneumonia, 4 from heart disease, and 5 from injuries.

Notification of Infectious Disease.—The Infectious Disease (Notification) Act, 1889, was only adopted late in 1894, and only came into force on January 15th, 1895. The number of cases notified in 1896 was 30, viz : 22 scarlatina, 1 diphtheria, 2 typhoid fever, 2 puerperal fever, and 3 erysipelas.

The Medical Officer of Health thinks that compulsory notification of infectious disease has been beneficial, and recommends the addition of measles to the list of diseases which must be notified.

Hospital Accommodation needed.—The District Council have not yet provided Isolation Hospital accommodation. On 3 occasions the Hospital at Hyde was made use of for isolating cases of scarlatina, which much needed isolation. The first of these 3 cases was taken from a crowded house in Husband Row, the other 2 were from a house in Hollin's Cottages. In both instances the disease was checked. Elsewhere (e.g. in Church Lane) where the initial case was not removed, 4 cases occurred in one house, and 3 in another,

The District Council have signified their willingness to join Bredbury and Romiley and the Stockport Rural District in providing a hospital, but these Authorities are not willing to join with Marple.

Measles and Whooping-cough.—There have been a few cases of both these diseases, but of a mild type.

Influenza has been prevalent to some extent all the year, but the malady has not been of a severe type.

Disinfection.—The District Council has no apparatus for disinfecting infected bedding, &c., with steam, and no arrangement with the Authorities at Hyde or Stockport to undertake the work. As regards infected premises, the Medical Officer of Health has no difficulty in getting these fumigated and cleansed.

Factories and Workshops are inspected. They have been found well kept and looked after and sufficiently ventilated.

Schools.—These have also been duly inspected, and were found clean and well ventilated.

Refuse Removal.—A much needed improvement has been effected. The District Council have made arrangements for the regular emptying of ashpits, &c., by the Council's men.

Sewers and Sewage Disposal.—The new main sewer from Rose Hill to Hawk Green is working well and has been a great benefit to the district it serves. The outfall works still require some further attention, and this will be given.

Bakehouses and Slaughter-houses.—These have been inspected and found clean and in satisfactory condition, but some require structural alterations.

Dairies, &c.—The milk supply is plentiful and good. The Medical Officer of Health trusts that regulations made under the Dairies, Cowsheds, and Milk Shops Order will lead to a more cleanly condition of dairy farms and better provision of light, air, and water for the cows.

New Houses.—During the year, 46 new houses were erected, together with some first class cottages having three rooms apiece. Such cottages are much needed, for the Medical Officer of health knows of "several cottages where three and four grown-up persons, unmarried and of both sexes, sleep in the same bedroom.

Canal Boats.—The canal boats have been regularly inspected and found clean.

The Burial-grounds are in good condition. There is a scheme for laying out and planting the old and new portions of All Saints' Churchyard.

Summary of Requirements.—The Medical Officer of Health concludes his Report by submitting for the further consideration of the District Council the following requirements :—

1. The provision of a small Isolation Hospital.
2. The provision of means for disinfecting bedding, &c.
3. The registration of slaughter-houses and bakehouses.

MIDDLEWICH.

Urban District.

Medical Officer of Health—to March, 1896, the COUNTY
MEDICAL OFFICER ;
after March, 1896, DR. T. W.
H. GARSTANG.

Population at Census, 1891—4001.

Estimated Population in middle of 1896—4810.

Area in Acres—1095.

Birth-rate per 1000 living—38.6.

Death-rate per 1000 living—16.8.

Death-rate from seven principal Zymotic Diseases—2.9.

Deaths under one year to 1000 births—134.

This Urban District includes the whole of the Parish of Middlewich, and parts of the Parishes of Newton and Kinderton-with-Hulme.

During 1896, the number of births registered in this district was 186; and the number of deaths registered (including 2 occurring outside the district, and excluding 2 not belonging to the district) was 81. The birth-rate is 2.2 below the mean birth-rate in 1892-95; and the death-rate is 2.4 below the mean death-rate in 1892-95.

The number of births registered in the first quarter was 59, in the second 41, in the third 46, and in the fourth 40. The number of deaths registered in the first quarter was 15, in the second 27, in the third 19, and in the fourth 20.

Infantile Mortality.—Twenty-five of the deaths recorded were of infants under one year old, viz.:—5 convulsions, 4 teething, 3 premature birth, 3 debility, 3 diarrhoea, 3 pneumonia, 1 scarlatina, 1 whooping-cough, 1 phthisis, and 1 paralysis. Six were registered in the first quarter, 5 in the second, 7 in the third, and 7 in the fourth. Twenty-one of the whole number were under six months old at the time of death. The proportion of infantile deaths to each 1000 births was 134. This is less than the average for Middlewich, which in the four years 1892-95 was 151.

Infectious Diseases.—The number of cases of infectious diseases notified was 67, viz.:—55 scarlatina, 1 diphtheria, 1 membranous croup, 2 typhoid fever, and 8 erysipeles. The number of cases notified in the first quarter was 37, in the second 14, in the third 4, and in the fourth 12. The deaths from notifiable diseases were 5, viz.:—3 scarlatina, 1 croup, and 1 typhoid fever.

Scarlatina was epidemic in the district at the end of 1895. In January, 1896, 15 cases occurred (in 8 houses), in February 10 cases (in 5 houses), in March 8 cases (in 5 houses), and in April 9 cases (in 6 houses). After this there were a few

scattered cases, viz. :—3 in June, 1 in September, 6 in November, and 3 in December. There was 1 death in January, 1 in June, and 1 in December. The number of houses infected was 33.

Diphtheria and Croup.—A case certified as diphtheria proved fatal in July, but it did not belong to this district. In February occurred a fatal case, certified as membranous croup.

Typhoid Fever.—Two cases only of this disease were notified—1 being in July and 1 in November. The first was fatal.

Erysipelas.—Eight cases of this disease were notified to the Authority. In one case, that of a child 3 years old, the primary cause of death was a severe burn. The other cases terminated in recovery.

Zymotic Mortality.—The number of deaths from the principal zymotic diseases was 14, viz: 3 scarlatina, 1 croup, 1 typhoid fever, 4 whooping-cough, and 5 diarrhoea. This is equal to a zymotic death-rate of 2·9 per 1000 living. The mean zymotic death-rate in 1892—95 was 1·9. The 4 deaths from whooping-cough occurred respectively in January, February, May and July, those who died being all under 2 years of age. Three of the deaths from diarrhoea occurred in August and September, 1 death was in May and 1 in December. Four of those who died were children under 4 years of age.

Action taken to prevent spread of Infection.—All cases notified are promptly visited by the Inspector, and if thought desirable by the Medical Officer of Health also, isolation is enforced, disinfectants are supplied, and the infected room is ultimately fumigated with sulphur. As regards sulphur fumigation the Medical Officer of Health has satisfied himself that in the opinion of experts its efficiency as a method of disinfection is far inferior to spraying with a solution of perchloride of mercury. Accordingly, on August 5th, he recommended the adoption of this improved way of disinfecting rooms. The District Council have not yet sanctioned the purchase of the needful apparatus. For the disinfection of bedding, clothes, &c., which can only be satisfactorily disinfected by steam, there is no provision.

On September 17th the District Council accepted the advice of the Medical Officer of Health to offer to disinfect after deaths from phthisis. Even if in many cases the offer be refused, there will be a good effect from the Authority having given practical intimation that phthisis is infectious. Greater care in adopting proper hygienic measures will diminish the number of preventable cases of this common and fatal disease.

Hospital provision.—At present none exists. Pressure is being exercised by the County Council to induce the four Authorities in the Northwich Union to form a Hospital District and make joint provision. The Middlewich District Council is

willing to join with the other Councils, but no agreement has been arrived at.

Deaths from Injuries.—Seven inquests were held during the year, and in 4 cases it was found death was due to injury. One was a case of drowning, but the body did not belong to the County, in one case death was due to burns, in another to a fall and in another to suicide by hanging.

Alcoholism.—Among the deaths was one certified as due to alcoholism.

The Infectious Disease (Prevention) Act, 1890.—The District Council have been advised, more than once, to adopt this Act, but have not yet done so.

Water-supply.—One of the most important events of the year has been the completion of the Water Works and the installation of the public supply. The quality of the water has been tested and pronounced good. One sample from an existing well has been analysed and condemned. The town's water has been laid on, to the premises supplied by this well.

Insanitary Property.—In this district are very many old and unsatisfactory cottages. A number of the worst were inspected by the County Medical Officer in March, and this property has since been under constant observation. Fourteen cottages have been certified as unfit for human habitation. Three of this number have lately been repaired, and when sanitary conveniences are given them they will be again fit for occupation.

Systematic Inspection.—The District Council having appointed a new Sanitary Inspector in April, there has been considerable activity in the matter of inspection.

Sanitary Accommodation and Refuse Removal.—The Inspector has reported a large number of houses without ash pits and privies, or with dilapidated privies, and as regards these notices have been served on the owners in many cases. A special circular has been issued by the Council to the butchers in the town, warning them not to deposit offal on their manure heaps, as serious nuisances have been created by this practice. Emptying the ash pits, &c., has been undertaken by the Authority, and has been better done. In probably about nine-tenths of the houses in the district the sanitary accommodation consists of old-fashioned privies. This implies very serious soil-pollution from leakages, and is quite sufficient to exercise an unfavourable influence on the health of the town.

The arrangements for dealing with the sewage at the out-fall were inspected by the County Medical Officer in November.

Common Lodging-houses.—There are seven in the district, but only three are licensed. One prosecution for receiving lodgers without license has been undertaken, a conviction

obtained, and a fine imposed. The houses are frequently inspected and found generally satisfactory.

Slaughter-houses are frequently visited by the Inspector. Generally their condition is satisfactory.

Canal Boats.—These are inspected with regularity. Various infringements of the Canal Boats' Acts have been noted and reported. Requirements have been complied with after service of notice without further proceedings.

MOTTRAM.

Urban District.

Medical Officer of Health—DR. W. E. S. BURNETT.

Population at Census, 1891—3270.

Estimated Population in middle of 1896—3270.

Area in Acres—1084.

Birth-rate per 1000 living—25·3.

Death-rate per 1000 living—22·6.

Death-rate from seven principal Zymotic Diseases—1·2..

Deaths under one year to 1000 births—265.

The Urban District of Mottram-in-Longdendale includes Broadbottom.

In 1896, the number of births registered in the district was 83, and the number of deaths registered in the district was 74. The birth-rate was 3·3 below the mean birth-rate in 1892·5, and the death-rate was 3·4 above the mean death rate in 1892·5.

One death was due to puerperal fever, 1 to whooping-cough, and 3 deaths were due to measles. Three deaths were due to phthisis, 16 to bronchitis or pneumonia, 8 to heart disease, and 6 to injuries

Infectious Disease notified.—Eight cases of infectious disease were notified, viz.:—1 scarlatina, 5 typhoid fever, 1 puerperal fever, and 1 erysipelas.

Scarlatina.—The child who developed scarlatina was sent from Hyde to prevent its taking the disease from others of the same family, who were suffering from it. Unfortunately the disease had been contracted, and as soon as there was evidence of this the child was sent home again.

Typhoid Fever.—Two cases of this disease occurred in New Street, Broadbottom, respectively in July and September; two others in Old Street, Broadbottom, respectively in September and November; and the remaining case at Mottram Moor, in November. Typhoid fever was prevalent in the same streets in the autumn of 1895; and, as the excreta had then “been buried in the middens,” the Medical Officer of Health thinks the cases in 1896 were connected with those in the previous year.

Puerperal Fever.—This case occurred in Old Street. Nothing insanitary could be found on the premises.

Erysipelas.—The case of this disease occurred in a house which was uncleanly, over-crowded, and ill-ventilated.

Measles was imported into the district by a child who had been staying with relations at Hadfield, where the disease was epidemic at the time. After sickening he was sent home, the eruption appearing on the following day. Steps were taken to isolate the case and keep all members of the family from school. However, other children—relations of the first patient, some of whom attended school—were unwisely allowed to enter the infected house, and the disease spread rapidly, soon becoming epidemic. Measles not being notified, the number of cases is not known; but it is estimated that there were not less than 200. As the schools appeared to be the chief infective centres, and children attended the schools from the neighbouring village of Hattersley, the Medical Officer advised the closing of the Day and Sunday Schools for several weeks. This was done, and was followed by the abatement of the epidemic.

Water-supply and Milk.—The water-supply has been abundant and good throughout the year. There are no milk-shops in the district, the milk being supplied from farms outside.

Inspection.—Periodical inspections have been made by the Medical Officer of Health and Inspector—most attention being given to parts most requiring it.

There is only one lodging-house, and this is kept clean and in order. Slaughter-houses have been duly inspected.

There are no offensive trades carried on in the district or neighbourhood.

Sewering—Reference was made in the last Annual Report to the main sewer laid through Market Street, Mill Brow, Well Row, and Summerbottom to the outfall works at Hodge Fold. The connection of house drains with this main sewer is progressing satisfactorily. It was temporarily stopped during the severe weather. When the work is finished, it will be advisable for the District Council to adopt some system for flushing the sewers at regular intervals.

Nuisance Abatement.—The Inspector has attended to a large number of nuisances—defective or obstructed drains, filthy closets, overflowing middens, &c.—and obtained their abatement. New drains have been laid, rain-spouts have been disconnected from the drains and made to deliver on traps, additional closets have been built, others have been re-constructed, &c. There is still room for improvement as regards sanitary fittings and accommodation in various parts of the district.

NANTWICH.

Urban District.

Medical Officer of Health.—To June, 1896, the County Medical Officer; after June, 1896, DR. J. D. MUNRO.

Population at Census, 1891—7412.

Estimated Population in middle of 1896—7536.

Area in Acres—703.

Birth-rate per 1000 living—32.3.

Death-rate per 1000 living—18.0.

Death-rate from seven principal Zymotic Diseases—2.1.

Deaths under one year to 1000 births—106.

During 1896 the number of births registered in this District was 244, and the number of deaths registered was 151. However, 32 of the deaths registered took place in the Workhouse, and 19 of these were of persons not belonging to the town. On the other hand, 4 persons who died in the Men's Hospital, Alvaston (Nantwich Rural District), belonged to the town of Nantwich. The number of deaths belonging to the Urban District was therefore 136.

The mean birth-rate during the four years 1892-95 was 32.2. The mean death rate during the same four years was 19.7. Thus in 1896 the birth-rate was just above the mean of recent years, and the death-rate was 1.7 below the mean of recent years.

The number of births registered in the first quarter was 62, in the second 64, in the third 58, and in the fourth 60. The number of deaths belonging to the District in the first quarter was 25, in the second 43, in the third 26, and in the fourth 42.

Infant Mortality.—Twenty-six of the deaths belonging to the District were of infants under one year old, viz. : 10 marasmus, 8 bronchitis or pneumonia, 4 convulsions, 3 premature birth, and 1 whooping-cough. Three were registered in the first quarter, 9 in the second, 3 in the third, and 11 in the fourth. Fifteen of the 26 infants were under six months old at the time of death.

Infectious Diseases.—The number of cases of infectious diseases notified was 282, viz. : 275 scarlatina, 1 diphtheria, and 6 erysipelas. The number of deaths from the principal zymotic diseases was 16, viz. : 11 scarlatina, 2 measles, 2 diarrhoea, and 1 whooping-cough.

Scarlatina was epidemic in the District since the spring, and was still prevalent at the close of the year. Generally the disease was of a mild type, as is evidenced by the fact that only 4 per cent. of the notified cases proved fatal. Indeed the mildness of the malady, in many instances, led the parents to regard

it as scarcely serious, so that instructions given for the prevention of the spread of the disease were not carried out. Children suffering from the disease have not been separated from the rest of the family even so far as might have been practicable, early symptoms of disease have escaped notice, and in several cases pupils have been found attending school, during the stage of "peeling," when scarlatina is exceptionally infective. Thus the epidemic made progress till in almost every part of the town cases were reported. In September it was judged expedient to advise the closing of the public schools, and this was done for a period of six weeks. The measure was so far effectual that during this time there was a marked and steady decrease in the number of cases notified. Shortly after the re-opening of the schools scarlatina again spread, and on December 7th the public schools were closed for a further period of six weeks. Of the 11 deaths certified as due to scarlatina, 4 occurred during the second quarter, 1 in the third quarter, and 6 in the fourth quarter.

Isolation Hospital needed.—The ill-success of the local Authority in arresting the spread of scarlatina is doubtless due to several causes, but among these a prominent place must be given to the absence of isolation hospital accommodation. This matter has been from time to time under the consideration of the District Council, and yet no definite step towards making the needed provision has been taken. It must often happen, especially among the poor, that infectious patients cannot be properly isolated and treated at their own homes, and when these are the initial cases in an outbreak, removing them to a hospital may be the means of preventing an epidemic. Obviously some accommodation is required, and the question for the District Council to determine is—How is this to be provided? About one bed to each 1,000 persons in the local population would be sufficient provision. This might be arranged for by erecting a Cottage Hospital, or by coming to terms with the Crewe Corporation for the use of their Hospital, or by making joint provision with the Nantwich Rural District Council.

Measles.—A large number of cases of this disease occurred, especially during the summer and autumn. It is impossible to estimate the extent of the disease, as it is not notifiable. The cases were mostly of a mild type, but 2 deaths occurred in the third quarter of the year. One of those who died was 2 years old and the other 14 months. In both cases the disease was complicated with bronchitis.

Whooping-cough was prevalent during the last quarter, but the cases were mostly of a mild type. There was one death ascribed to this cause in December.

Diphtheria and Erysipelas.—There was only one case of diphtheria known to the Authority in the whole year. Six

cases of erysipelas were notified. There was no death registered from either disease.

Diarrhœa.—The 2 deaths certified as due to acute diarrhœa occurred respectively on August 30th and September 2nd—one was of a female infant (age 20 months), and the other of a woman 73 years old.

Lung Diseases.—Plithisis was the registered cause of death in 9 cases. This is equal to a death-rate of about 1·2 per 1000 living. Bronchitis or pneumonia was the cause of death in 27 cases, being equal to a death-rate of 3·58, which is somewhat high.

Heart Disease was the cause of death in 7 cases, being equal to a death-rate of 0·9—a low rate.

Deaths from Injuries.—There were only 2 deaths coming under this description. One was that of a boy (10 years old), who died in February, from rupture of the bowels, caused by the kick of a horse. The other death took place in October, the subject being a boy (8 years old), killed by a fall on his head from a cart.

Scavenging and Refuse removal.—The Inspector, Mr. Herbert Gentry, has given constant and careful attention to this work. There are upwards of 1100 pail-closets, the emptying of which is done weekly at night. The contents are carted outside the town, and applied to the land. The midden closets and cesspools are emptied as required.

The Main Sewers are in good order. An extension has been made during the year: about 170 yards having been laid in Wellington Road, and about 80 yards in Cemetery Road. There are 19 openings on the main sewers, which are used for inspection or flushing purposes.

The main sewers are constructed with settling-tanks for intercepting the solids, and these are cleansed out every three or four weeks.

House - building and demolishing.—Nineteen new houses have been erected during the year (their sanitary arrangements having been carefully attended to); and a shoe factory is in course of erection. Five old houses have been pulled down.

Common Lodging-houses receive constant attention. There are 5 on the register, and these were visited almost daily. Eleven midnight visits were also paid. At all times the houses were found clean and orderly.

Dairies, etc.—There are 19 dairies and cow-sheds, which were regularly inspected throughout the year, and found in a satisfactory state.

Bakehouses and Factories were also regularly inspected, and found in good order.

Slaughter-houses.—There are 16 registered slaughter-houses in the district, and these were inspected weekly. The Inspector notes that in two instances he had to report the tenant for offences against the regulations. In one case legal proceedings were taken, but no conviction was obtained.

The Water-supply is from the Baddiley Water Works. Throughout the year it has proved adequate.

Canal Boats.—There were 56 canal boats inspected during the year. Except in two cases the boats were in order, and the regulations complied with. No case of infectious disease was found in any of the boats. Her Majesty's Chief Inspector of Canal Boats visited the district in December. He examined the Inspector's diary, &c., and expressed himself satisfied.

NESTON AND PARKGATE.

Urban District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—3577.

Estimated Population in middle of 1896—3671.

Area in Acres—3260.

Birth-rate per 1000 living—37.8.

Death-rate per 1000 living—17.4.

Death-rate from seven principal Zymotic Diseases—2.1.

Deaths under one year to 1000 births—144.

This Urban District consists of Little Neston, Great Neston, and Leighton. The area and population are given as follows:—

		Area in Acres.		Population at Census.
Little Neston	...	1214	...	1012
Great Neston	...	1405	...	2240
Leighton (including Moorside)		641	...	325

Parkgate is on the east bank of the river Dee, and is situated partly in the township of Great Neston and partly in Leighton.

In 1896 the births registered in the District numbered 139, and the deaths (including 3 that occurred in the Workhouse and 1 that occurred in the Isolation Hospital at Spital) numbered 64. The birth-rate is 0.9 below the mean birth-rate in the four years 1892-95, and the death-rate is 1.9 below the mean death-rate in the same four years.

There were 8 deaths from the principal zymotic diseases, viz.: 1 from typhoid fever and 7 from diarrhoea. The zymotic diseases death-rate was therefore 2.1 in 1896; in the four years 1892-95 it was 3.5.

Besides the 8 deaths from the principal zymotic diseases, there was 1 death from erysipelas, 3 deaths from phthisis, 7 from bronchitis or pneumonia, 2 from heart disease, and 4 from injuries.

Under the Infectious Disease (Notification) Act only 2 cases were reported. They were both cases of typhoid fever, and occurred at the same house. Both were removed to the Hospital at Spital, where one terminated fatally, as already noted. The premises were inspected, and action taken for improving the surroundings.

The Medical Officer of Health visited the district from time to time, and in July and November visited the district generally, and reported for the guidance of the Council on various points in connection therewith.

Water-supply.—The district has a very good supply from its own Water-works—the water being derived from a deep well. In the course of the year 2,800 yards of water-mains have been laid. Three houses have been newly supplied.

Sewering.—Neston and Parkgate are well sewered, and work has been undertaken during the year for the further sewerage of Little Neston. The Neston and Parkgate sewers are flushed weekly, and the Little Neston sewers frequently.

Bye-laws.—The model bye-laws of the Local Government Board with respect to new streets and buildings have been in force since the end of 1893.

New Houses.—Five new houses have been built during the year.

Surveyor and Inspector.—Mr. Morris resigned as Surveyor and Inspector in the spring of 1896 in order to take another appointment, and Mr. Corrie succeeded to the post. The latter reports that 43 nuisances have been abated during the year, and that 10 houses have been re-drained. The dairies and slaughter-houses have been inspected.

Cases of overcrowding are infrequent.

Refuse Removal.—Arrangements are made by the Council for the emptying at short intervals of the ash-pits and privies.

Isolation Hospital accommodation is provided through the Joint Hospital Board, to which this district contributes.

NORTHWICH.

Urban District.

Medical Officer of Health to March, 1896, the COUNTY MEDICAL OFFICER, after March, 1896, DR. H. E. GOUGH.

Population at Census, 1891—14914.

Estimated Population in middle of 1896—17800.

Area in Acres—1388.

Birth-rate per 1000 living—38·4.

Death-rate per 1000 living—17·6.

Death-rate from seven principal Zymotic Diseases—1·8.

Deaths under one year to 1000 births—170.

This Urban District includes the parishes of Witton-cum-Twambrooks (including a formerly detached part of the parish of Leftwich), Northwich and Castle Northwich, and parts of the parishes of Hartford, Winnington and Leftwich.

During 1896, the number of births registered was 685, and the number of deaths registered was 327. Twenty-three of the deaths occurred in the Union Workhouse, and 9 in the Victoria Infirmary. Fifteen of these 32 deaths were of persons not belonging to this Urban District, and have been added to the deaths in the districts to which they belonged. There were also 2 deaths registered outside Northwich of persons belonging thereto. The number of deaths belonging to this Urban District is therefore 314. The birth-rate in 1896 was 1·4 below the mean birth-rate in 1892-95; and the death-rate in 1896 was 4·5 below the mean death-rate in 1892-95.

The number of births registered in the first quarter was 177, in the second 179, in the third 156, and in the fourth 173. The number of deaths belonging to the district registered in the first quarter was 63, in the second 65, in the third 72, and in the fourth 114. The death-rate in the first quarter was 14·1, in the second 14·6, in the third 16·1, and in the fourth 25·6. The increased death-rate in the last quarter was due chiefly to the prevalence of diseases of the lungs.

Infant Mortality.—One hundred and seventeen of the deaths recorded were of infants under 1 year old, viz:—28 diseases of the lungs, 25 convulsions, 17 inflammation of the stomach and bowels and diarrhoea, 14 premature birth, 12 marasmus, 5 tubercular affections, 4 malformations at birth, 2 syphilis, 2 inflammation of the membranes of the brain, 1 inflammation of the kidneys, 1 phthisis, 2 measles, 1 whooping-cough and 3 found dead in bed. Twenty-three were registered in the first quarter, 35 in the second, 17 in the third, and 42 in the last. Of the 117 infants 79 were under six months old at the time of death.

Infectious Diseases.—The number of cases of infectious diseases notified was 243, viz:—205 scarlatina, 3 diphtheria, 18 typhoid fever, 1 puerperal fever, and 16 erysipelas. Of the

whole number 52 were notified in the first quarter, 32 in the second, 70 in the third and 89 in the fourth. All were treated at home.

Zymotic Death-rate.—There were 33 deaths from the seven principal zymotic diseases, viz :—11 scarlatina, 4 typhoid fever, 3 measles, 6 whooping-cough and 9 diarrhoea. This is equal to a zymotic death-rate of 1·8 in 1896. The mean zymotic death-rate in Northwich in 1892-95 was 2·4. Of the 33 deaths 2 were in the first quarter, 4 in the second, 11 in the third, and 16 in the fourth.

Scarlatina.—The epidemic of this disease began in the last quarter of 1895. The number of cases notified (205) is quite exceptional. Generally the disease was exceedingly benign in character, and undoubtedly many cases were unrecognised and therefore not notified. Counting only notified cases, the case mortality would appear to be 5·3 per cent., but it was actually much lower. One of the deaths was in the first quarter, 4 were in the third, and 6 in the fourth. In 4 of the fatal cases death was due to the sequelæ of the disease.

Diphtheria.—Only 3 cases were notified, and these occurred in January and February. There was no death ascribed to this disease or croup.

Typhoid Fever.—Eight cases were notified in the first quarter, 2 in the second, 5 in the third, and 3 in the fourth. Three of the cases in the first quarter occurred in the same house and were notified on the same day. Four other cases were in close proximity to each other. The first two were in the same house, and notified respectively on August 15th and 22nd. The third case in the same road was reported on October 6th, the patient being a lodger, who arrived from the seaside with the disease fully developed. The house in which he lodged was newly built, and there was nothing of an insanitary nature connected with it. The fourth case, notified on November 23rd, was in the same row of houses as those reported in August. In this row of houses the cellars were drained by a drain running from end to end of the row under the houses and communicating with the main sewer. The traps were old-fashioned, with very shallow seals, and, as they were seldom flushed, often useless. This drain was blocked, and sewage had backed up into the cellars, not only through the traps but through joints. The drain was re-laid, disconnected from the sewer, and properly trapped. The imported case terminated fatally, the other 3 cases recovered. The four fatal cases occurred respectively in March, May, August, and October ; the ages of the deceased were 26, 21, 38, and 33 years.

Puerperal Fever.—The only case notified occurred in July, but a death was certified as due to puerperal fever in April, which had not been notified.

Erysipelas.—Three cases were notified in the first quarter, 4 in the second, 3 in the third, and 6 in the fourth. They all recovered.

Measles.—There is no reliable information as to the actual number of cases, but twice during the year the disease was epidemic to some extent. Two deaths occurred in May and one in October. Those who died were under five years of age.

Whooping-cough.—There was a somewhat extensive epidemic of whooping-cough during the last quarter. Of the 6 who died, 1 was over 5 years, the others were all under 3 years old.

Diarrhoea.—There was 1 death recorded from this disease in April: there were 3 deaths in July, 3 in August, and 2 in December. Besides these, there were 19 cases certified as "enteritis," making 28 cases of diarrhoeal disease, of which 23 were of persons under 5 years of age.

Phthisis, Bronchitis, and Pneumonia.—There were 11 cases of phthisis, and 50 of bronchitis and pneumonia. The death-rate from phthisis was thus 0·6, and the death-rate from bronchitis and pneumonia was 2·8 per 1000 living.

Injuries.—The deaths from injuries were not numerous. There were 2 from scalds, there was 1 from drowning, 1 from a fracture of the leg, and 1 from being run over by a railway train. To these may be added the 3 children found dead in bed, referred to in the paragraph on infant mortality. These deaths were probably due to suffocation, caused by overlying or otherwise.

Isolation Hospital Accommodation.—The old building at Wade Brook and the marquee are kept in readiness for cases of small-pox. The question of providing a new hospital has been discussed by the Northwich Urban District Council and the County Council; and the former passed a resolution agreeing to combine with other Authorities for providing an Isolation Hospital, as recommended by the County Council. In the meantime, cases of infectious disease are isolated, as far as possible, in their own homes, and supplied with disinfectants free of cost; while children belonging to infected houses are prevented from attending school. Printed papers, giving instructions how to deal with infectious cases, are supplied to those in charge of such cases. After death or recovery the infected house is disinfected by the Inspector.

Disinfecting Apparatus needed.—As at present there is no way of getting the bedding, &c., efficiently disinfected, there is urgent need of a disinfecting apparatus where bedding could be properly disinfected by steam.

Systematic Inspection.—The town is for inspection purposes divided into four parts, and each part is methodically

visited by the Sanitary Inspector, Mr. Charles Potts, once a month. Nuisances are thus often discovered, and the abatement of many is obtained promptly and in an informal manner.

Abatement of Nuisances.—There were 116 notices served requiring the abatement of various nuisances. In this way 23 cesspool-closets have been converted into water-closets; and 56 cesspools have been abolished and replaced by pail-closets. Many old closets have been pulled down and reconstructed, and many ashpits have been reconstructed. Thirty new ashpits have been built.

Drains and Sewers.—Many lengths of drains and sewers have been relaid during the year. New man-holes and flushing-eyes are being placed in the present system of sewers, to facilitate inspection and cleansing. Systematic flushing of the sewers has been carried out. The street-gullies are emptied and disinfected weekly. A plan is before the Council for the comprehensive sewerage of the Castle district. Most of the 248 houses which have been built during the year are on the water-carriage system.

The Sewage Farm, which had subsided so much as to interfere with its efficiency, has been for half its extent raised, re-levelled and subsoiled. The settling-tanks have also been raised and made more capacious.

Overcrowding.—Many cases of overcrowding have been dealt with during the year.

Refuse Removal.—The work of the contractor for removing refuse is carefully supervised by the Sanitary Inspector. The refuse is removed entirely outside the Urban District, and deposited upon farms in the neighbourhood. The method of collecting the contents of privy-pails is objectionable owing to one pail only for each closet being provided. If there were a duplicate pail to each closet, a clean one might be put in at the time the full one was removed, and the disgusting operation of emptying the pail under the windows and near the doors of houses would be unnecessary. In fitting a closet of course two pails would cost more than one, but the two would last twice as long as one. Thus for a small expenditure a great improvement might be effected. The change would certainly be good for the health of many householders, and increase their comfort.

Common Lodging-houses.—There are 8 such houses on the register. These have been periodically visited by the Inspector who reports that the law as regards common lodging-houses has not been transgressed.

Dairies and Cowsheds.—There are 9 registered dairies, &c. These have been visited every three months by the Inspector, who sees that they are kept clean and lime-washed.

Slaughter-houses.—There are 15 registered slaughter-houses, all regularly inspected once a month. The Inspector reports that they are kept clean and in order, and have been periodically lime-washed.

Canal Boats have been inspected several times during the year. Owners have in many cases been called upon to paint, clean, or repair boats, and these requirements have been complied with.

RUNCORN.

Urban District.

Medical Officer of Health—DR. F. McDougall.

Population at Census, 1891—20050.

Estimated Population in middle of 1896—18000.

Area in Acres—1179.

Birth-rate per 1000 living—34.3.

Death-rate per 1000 living—15.1.

Death-rate from seven principal Zymotic Diseases—1.1.

Deaths under one year to 1000 births—129.

This District includes Higher Runcorn.

It will be noted that the population of the district, as estimated for the middle of the year 1896, is 2,050 less than the population enumerated at the date of the Census. This estimate seems to be warranted by the depressed state of trade locally.

In 1896, the number of births registered in the district was 620, and the number of deaths registered in the district was 268. To the number of deaths must be added 4 deaths of persons belonging to the district which took place in the Workhouse at Dutton. Eighty of those who died were infants under one year old and 53 were persons 65 years old and upwards. The death-rate is 6.4 below the mean death-rate in 1892-95.

Cases of Infectious Diseases notified.—The number of cases of infectious disease notified in 1896 was 183, viz. :—1 small-pox, 96 scarlatina, 12, diphtheria, 4 membranous croup, 22 typhoid fever, 22 continued fever, 1 puerperal fever, and 25 erysipelas. The number of cases notified in 1895 was 373, and the number notified in 1894 was 313.

Zymotic Mortality.—The number of deaths from the chief zymotic diseases was 21, viz. : 3 scarlatina, 4 croup, 5 typhoid fever, and 9 diarrhoea. There were also two deaths from rheumatic fever. The zymotic death-rate was exceptionally low in 1896, being equal to 1.1 per 1000 living. The mean zymotic death-rate in 1892-95 was 4.8.

Small-pox.—There was but one case notified during the year, and there was considerable doubt as to whether the patient really had small-pox. As a precaution, however, the patient was removed to hospital, and was there attended by the Medical Practitioner who sent in the notification. It was found impossible to trace the source of infection. According to the evidence of the patient and his friends, he had not been out of the town for at least five weeks prior to his attack, and there seems no reason to call in question these people's veracity.

Scarlatina was less prevalent than it has been in recent years. In 1896 there were 96 cases notified, 3 of which were fatal. In 1895 there were 274 cases, 10 of which were fatal. In 1894 there were 162 cases, 9 of which were fatal. The type of the disease in 1896, as in 1895, was mild. The 97 cases occurred in 73 houses. The 3 who died were under 5 years of age. Five cases were removed to Hospital. One case attracted considerable attention. A young girl developed well-marked scarlatina in January and passed through the usual phases of the disease satisfactorily. In May she again contracted the disease, having all the signs and symptoms a second time. She made a good recovery.

Diphtheria and Croup.—The 12 cases notified as diphtheria were not of a severe type, and all recovered. The cases occurred in 9 houses. The only cases of croup (4) which came to the knowledge of the Authority were all fatal—they were very young children. Of the cases reported as diphtheria 1 was isolated in Hospital. In one house grave sanitary defects were noted and remedied.

Typhoid and Continued Fever.—As stated already, there were 22 cases notified as typhoid fever and 22 cases notified as continued fever. The 5 deaths recorded were all certified as from typhoid fever. Most of the cases occurred in February, August, September, October, and November. Several cases were imported, and in one instance the disease appeared to be communicated from patient to patient.

Erysipelas.—Cases notified under this heading "may be anything from a pimple on the nose to a severe constitutional attack." Fortunately the latter form of disease is rare in the district. The 25 cases (none fatal) notified in 1896 compare favourably with 35 cases (1 fatal) in 1895, and 41 cases (2 fatal) in 1894.

Diarrhoea.—Eight of the 9 who died from diarrhoea were children under five years old, one was a person aged upwards of 65 years. In 1895 there were 33 deaths from diarrhoea, and in 1894 there were 18 deaths from diarrhoea.

Lung Diseases.—There were 19 deaths registered from phthisis—equal to 1.05 per 1000 living. The number of deaths

ascribed to bronchitis or pneumonia was 46—equal to 2.55 per 1000 living.

Deaths from Injuries.—There were 23 deaths from injuries in 1896—equal to a death-rate of 1.27 per 1000 living. In 1895 there were 23 deaths from injuries, and in 1894 there were 25 deaths. This makes an exceptionally high death-rate from injuries year by year.

Improved Sanitary Condition.—The Medical Officer of Health, in conclusion, remarks on the vastly improved sanitary condition of Runcorn: much good work having been done in recent years. New streets have been made, old streets improved, a perfect system of drainage has been adopted and carried out, and many primitive ash-pits and privies have been abolished. Water-carriage (undoubtedly the best method of sewage disposal) is making progress. The Authority may point to the low death-rate in 1896 as the strongest evidence that their efforts have had good results, and they will be encouraged to persevere.

The Inspector (Mr. Percival) furnishes information as to matters coming under his supervision.

Nuisance Abatement.—The number of nuisances discovered or brought to the knowledge of the Inspector was 407, the number abated was 396, and the number outstanding on December 31st, 1896, was 11. The number of preliminary notices issued in respect of these nuisances was 158, and the number of statutory notices served was 12. Several nuisances are often included in one notice. A large number of nuisances were owing to various defects in dwelling-houses—defective drains, soil-pipes and gully traps, obstructed drains, sinks directly connected to drains, insanitary ash-pits and privies, defective water-closets, unpaved yards and passages, houses dirty or without proper ventilation, without proper water-supply, etc., or with stagnant water in the cellars. Other nuisances abated were from accumulations of manure, decayed fruit, fish, etc. Eleven smoke nuisances were dealt with, and 2 nuisances from overcrowding.

Milkshops and Cowsheds.—There are 38 milkshops and 13 cowsheds. These have been regularly supervised, and only in two instances was there cause for complaint.

Common Lodging-houses.—These are registered, and have been regularly inspected. There has been no cause of complaint.

Workshops.—Twenty-three workshops have been visited and inspected during the year. There has been no cause of complaint.

SALE

Urban District.

Medical Officer of Health—DR. J. S. WITHERS.

Population at Census, 1891—9644.

Estimated Population in middle of 1896—11,500.

Area in Acres—2006.

Birth-rate per 1000 living—25.3.

Death-rate per 1000 living—11.34.

Death-rate from seven principal Zymotic Diseases—0.8.

Deaths under one year to 1000 births—123.

The estimate of the population seems high, but the Medical Officer of Health believes it is not too high. The houses built since the Census are assumed to average the same number of occupants as the houses in the district were ascertained to have at the time of the Census.

During 1896, the number of births registered was 291, and the number of deaths registered (including 2 occurring outside the district among persons belonging thereto) was 132. The birth-rate is 0.7 above the mean birth rate in 1892-95; and the death-rate is 2.5. below the mean death-rate in 1892-95.

The number of deaths from the principal zymotic diseases, in 1896, was 10, viz:—2 scarlatina, 1 diphtheria, 1 whooping cough and 6 diarrhoea. There was 1 death from erysipelas. There were also 6 deaths from phthisis, 26 from bronchitis or pneumonia, 6 from heart disease, and 2 from influenza.

Cases of Infectious Disease notified.—The number of cases of infectious disease notified was 64, viz:—31 scarlatina, 13 diphtheria, 7 typhoid fever, and 13 erysipelas. Of these 2 cases of scarlatina, 2 of diphtheria, 3 of typhoid fever, and 1 case of erysipelas were sent to Monsall Hospital.

Scarlatina.—For the most part the cases were of a mild type. Ten cases were notified in the first quarter, 6 in the second, 10 in the third and 5 in the fourth. Seven of the scarlatina patients were under 5 years of age. In 1895, the number of cases notified was 41, and in 1894, the number was 71. The infected houses were visited and disinfection carried out by the Council's Officers.

Diphtheria.—Of the 13 cases of this disease notified, none occurred in the less sanitary parts of the District, and not one could be associated with any special hygienic defect.

Typhoid Fever.—Three of the 7 cases which occurred were in one house. The first patient in this group of 3 communicated his disease to the other 2, and this was almost certainly due to unskilled nursing. The origin of the disease in one of the other 4 cases is remarkable; a patient had been sent to Monsall Hospital suffering from erysipelas, and about a

fortnight after being discharged developed symptoms of typhoid fever.

Need of Isolation Hospital and Disinfector.—Attention has been drawn in previous Reports to this matter. Infectious patients who cannot be properly treated at home and are fit to bear the journey, have to be sent to the other side of Manchester, a distance of 8 miles. All the bedding also requiring to be disinfected has to be sent to the disinfecting-house in connection with the Monsall Hospital. An Isolation Hospital and Disinfector should be provided nearer home.

Work done and Nuisances abated.—With scarcely any exception, the houses in which infectious disease has occurred have been visited. The best available precautionary measures have been pointed out, and disinfection at the hands of the Council's officers has been insisted on. Regular inspections of those parts of the District in which sanitary defects are most likely to be found have been made, and the results recorded in a monthly report. During the year nuisances from the following causes have been dealt with:—defective or obstructed house drains, defective privies and ash-pits, stables, &c., dirty or ill-drained, and rubbish deposited.

Regular inspections have been made of all lodging-houses, dairies and slaughter-houses.

Overcrowding was during the year made the subject of a Special Report to the District Council, in which a number of grave cases were noted. These were all promptly dealt with.

Sewer Ventilators :—There have been fewer complaints than usual of effluvia from sewer ventilators.

The Sewering Scheme.—Owing to objections made on behalf of the Local Government Board, the carrying out of this scheme has been much delayed. It is believed that it will be completed in July, 1897.

SANDBACH.

Urban District.

Medical Officer of Health { to March, 1896, THE COUNTY MEDICAL OFFICER.
after March, 1896, DR. H. J. RICE.

Population at Census, 1891—5824.

Estimated Population in middle of 1896—6335.

Area in Acres—2694.

Birth-rate per 1000 living—31.5.

Death rate per 1000 living—16.5.

Death-rate from seven principal Zymotic Diseases—2.0.

Deaths under one year to 1000 births—150.

The estimate of population, as above, is arrived at by adding to the population enumerated at the date of the Census, 1891, the natural increase (excess of births over deaths) to June 30th, 1896.

During 1896, the number of births registered in this district was 200, and the number of deaths registered (including 4 which occurred in the Workhouse at Archid of persons belonging to Sandbach) was 105. The birth-rate in 1896 was 0·7 below the mean birth-rate in 1892—95, and the death-rate in 1896 was exactly equal to the mean death-rate in 1892—95.

Zymotic Diseases.—As the Infectious Disease (Notification) Act has not yet been adopted, the Local Authority have no direct means of getting early information of cases of infectious disease. Attention was drawn to the need of compulsory notification of infectious cases, in the last Annual Report. The number of deaths from the principal zymotic diseases, in 1896, was 13, viz: 2 scarlatina, 1 diphtheria, 2 fever, 2 measles, 3 whooping-cough and 3 diarrhœa.

Scarlatina and Measles.—There were extensive outbreaks of both these diseases, whole families having been infected in small houses. As the sick children, for the most part, had no one to nurse them but their mothers, it is creditable to these that the mortality was so small. Every house in which the Authority had intimation that cases had occurred was visited by the Medical Officer of Health and Inspector; instructions as to necessary sanitary precautions were given, and disinfectants were supplied. In some instances business premises were temporarily closed. There is no apparatus provided for the disinfection of infected bedding, &c., by steam.

Hospital provision.—The only provision made for the isolation and treatment of infectious patients is the wooden building which was erected in 1893, and is jointly available for Congleton Rural District and for Sandbach and Alsager. As this little hospital could not accommodate more than 8 persons at the same time, and could not receive simultaneously cases of two diseases, it is obvious that it does not adequately supply the needs of three districts which together have a population of upwards of 21,000.

Sanitary Work and Nuisance Abatement.—The Surveyor, Mr. Amos Wood, reports that the sanitary department has been worked with increased vigour during the year. Most of the houses in the district have been inspected, defects pointed out and remedied and nuisances abated. Houses without suitable out-offices have been condemned, and work required to make them habitable is now in progress. In some cases dilapidated closets have been re-built, in others, closets too close to dwelling-houses have been removed. Nuisances from pigsties too near dwelling-houses have also been abated.

Refuse Removal.—The Surveyor also reports that the scavenging work of the district has had constant attention. The amount of dry ashpit refuse collected and removed during the year was 1,500 loads. The quantity of night-soil removed amounted to 504 tubs; which was sold and realized over £95, about a third of the cost of scavenging.

Common Lodging-houses.—There are two lodging-houses on the register. These have been inspected from time to time and found to be in order.

Dairies, &c.—The milk dealers premises have been visited and advice and counsel given as to their cleanliness.

Pollution of River and Streams.—The river and streams have been inspected by the Medical Officer of Health and Inspector, and found in a very insanitary condition. This was duly reported to the District Council.

New Sewers and Sewage Works.—The new branch sewers, one from the Heath and the other from Park Lane, have been laid, and are now in working order and in connection with the out-fall sewers. The new sewerage works for dealing with the sewage of the district, except that of Wheelock and a few houses in isolated situations, are in course of construction.

Water-supply.—With few exceptions all the houses in the district, on the pipe line, where the private supply has been condemned, have been connected with the Council's mains, and are thus furnished with a continuous supply of pure and soft water. Although the Council is supplying a large quantity to a neighbouring Authority there is ample for the Sandbach District.

Factories and Workshops. the Medical Officer of Health reports, have been inspected and found in a satisfactory state. There was no overcrowding in the work-rooms. Two of the largest are being provided with new water-closets.

The Market-hall has been inspected by the Medical Officer of Health every Saturday, and with few exceptions on Thursday also. No unsound meat was detected.

TARPORLEY.

Urban District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—2702.

Estimated Population in middle of 1896—2720.

Area in Acres—6194.

Birth-rate per 1000 living—24.6.

Death-rate per 1000 living—13.2.

Death-rate from seven principal Zymotic Diseases—1.4.

Deaths under one year to 1000 births—74.

This Urban District consists of Rushton, Eaton, Utkinton, and Tarporley. The area and population are given as follows :—

			Area in Acres.		Population at Census.
Rushton	...	...	1797	...	324
Eaton	...	...	1344	...	461
Utkinton (including Cotebrook)			1889	...	498
Tarporley (including Rhuddall Heath)	...	...	1164	...	1419

During 1896, the births registered in the district numbered 67, and the deaths (including 1, which took place in the Chester Infirmary) numbered 36. The birth-rate in 1896 was 7.0 below the mean birth-rate in 1893-95; and the death-rate in 1896 was 6.2 below the mean death-rate in 1893-95. The proportion of deaths among infants is very small.

There were 4 deaths from the principal zymotic diseases, viz. :—1 typhoid fever, 1 whooping cough, and 2 measles. There were 2 deaths from influenza, 2 from phthisis, 6 from bronchitis or pneumonia, and 3 from heart disease.

Seven cases of infectious disease were notified, viz. :—4 scarlatina, 1 diphtheria, and 2 typhoid fever. These cases were all isolated as far as possible at home, and there was no spread of infection. The premises were inspected and disinfectants supplied where needed.

The Medical Officer of Health has pleasure in acknowledging the courtesy of medical practitioners in the district, in answering supplementary questions on the notification forms and doing what they can to prevent the spread of infection.

The District Council have expressed their readiness to co-operate with neighbouring Authorities for the purpose of providing Isolation Hospital accommodation for infectious cases.

In July and August the Medical Officer of Health made a general inspection of the district, and subsequently reported on sundry points of detail in connection with the ordinary sanitary work of the district.

Special attention has been given to the inspection of 5 milk farms, 3 slaughter-houses, and 5 bake-houses. These are, generally speaking, in very good condition.

During the year the pebble pavement has been removed from the High Street at Tarporley, and the surface macadamised.

Water-supply.—Tarporley is now well supplied with water from the Liverpool Water Works. It is a soft water, and great care is taken not to use lead pipes in any part of the house service.

Removal of Excreta.—Pending the completion of the sewage purification works at the outfall, the disposal of excreta in Tarporley, as in other parts of the district, is chiefly with ashpit refuse. The combined privies and ashpits are mostly

emptied by farmers when required. If the work is neglected the Surveyor intervenes.

Inspector's Report.—Mr. Knight, the Surveyor and Inspector of Nuisances, makes a very complete report of his work. According to this 25 orders have been issued for sanitary amendment of premises. Seven houses were repaired, cleansed and white-washed. In 10 houses the drains were repaired or cleansed ; the privies of 5 houses were converted into water-closets ; 7 houses were newly supplied with water ; and 6 infected houses were disinfected.

There appears to be little overcrowding, and there are no one-room tenements in occupation.

WALLASEY.

Urban District.

Medical Officer of Health—DR. A. CRAIGMILE.

Population at Census, 1891—33229.

Estimated Population in middle of 1896—41500.

Area in Acres—3408.

Birth-rate per 1000 living—28·2.

Death-rate per 1000 living—14·7.

Death-rate from seven principal Zymotic Diseases—1·5.

Deaths under one year to 1000 births—143.

This Urban District includes the three Townships of Poulton-cum-Seacombe, Liscard and Wallasey. The area of these and population at Census were as follows:—

	Area in Acres.	Population at Census.
Poulton-cum-Seacombe	... 830	... 14839
Liscard (including Egremont and New Brighton)	... 982	... 16323
Wallasey	... 1596	... 2067

The estimated population, birth-rate and death-rate of these three townships in 1896 were as follows:—

	Population.	Birth-rate.	Death-rate.
Poulton-cum-Seacombe	... 18000	... 33·7	... 16·1
Liscard	... 20800	... 23·6	... 13·6
Wallasey	... 2700	... 27·0	... 14·0

In calculating the above death-rates the deaths in the Seacombe and Wallasey Cottage Hospitals, the Mill Lane Hospital, and the Convalescent Home, have been referred to the townships to which they belong.

The number of inhabited houses at the end of 1896 was as follows:—

Poulton-cum-Seacombe	...	...	...	...	3641
Liscard	...	...	...	...	4315
Wallasey	...	...	...	...	582

At the end of 1895, the total amounted to 8044. There was thus an increase 494 houses during 1896.

Allowing 5 persons per house, the population at the end of the year was thus 42690. Taking into account the floating population in the docks and river, the estimate for the end of 1896 may be put at 43,000. At the end of 1895 the population was estimated at 40,000, so the estimate for the middle of 1896 is 41,500. This is probably not an excessive estimate, considering that the number of persons per house at the Census, 1891, was 5.2.

The number of births registered in the whole district, in 1875, was 1,172. The number of deaths registered in the whole district, 1896, was 613. The birth-rate is 1.2 below the mean birth-rate in the four years 1892-95. The death-rate is 1.0 below the mean death-rate in the four year 1892-95. In 1896, as in many past years, a very much larger number of births was registered in Poulton-cum-Seacombe than in Liscard, though the population was less by about one-eighth part. The number of deaths in the whole district was 155 in the first quarter, 141 in the second, 131 in the third, and 186 in the fourth. The death-rates of the four quarters were therefore respectively 14.9, 13.5, 12.6 and 17.9. The mortality was therefore low in all but the last quarter.

The following meteorological results, obtained through the courtesy of Mr. Plummer from the Bidston Observatory, show the mean temperature, mean barometer, and the amount of rainfall in inches for every month of the year 1896. The mean barometer, as given below, has been reduced to 32° Fahrenheit and to sea level.

1896.		Mean Temperature (degrees).	Mean Barometer (inches).	Rainfall (inches).
January	...	41.6	30.311	1.220
February	...	41.2	30.284	1.064
March	...	44.3	29.741	3.186
April	..	48.7	30.141	1.144
May	...	54.5	30.273	0.390
June	...	61.2	29.923	2.081
July	..	61.1	30.002	2.553
August	...	58.3	30.029	2.503
September	...	55.8	29.702	4.456
October	..	45.0	29.721	3.566
November	..	41.1	30.155	1.068
December	...	39.8	29.717	3.402

The Medical Officer of Health draws attention to the marked difference between the temperature and rainfall of 1896 and the temperature and rainfall of 1895. The sign + indicates an increase for 1896, and the sign — a decrease for 1896, as compared with the corresponding month of 1895.

1896.		Mean Tem. in degrees.		Rainfall in inches.
January	...	+ 8.4	...	-1.678
February	...	+ 11.1	...	+0.742
March	...	+ 3.6	...	+0.389
April	...	+ 1.1	...	-0.638
May	...	+ 0.2	...	-0.026
June	...	+ 3.5	...	+1.086
July	...	+ 1.7	...	-1.255
August	...	- 2.1	...	+0.650
September	...	- 5.2	...	+3.371
October	...	- 0.6	...	-1.877
November	...	- 4.3	...	-1.372
December	...	- 0.3	...	+0.966

This comparison shows that the mean temperature was higher in 1896 than in 1895, and higher in each of the first seven months of the year. It was markedly lower in September and November. During six months of 1896 the rainfall was less than in 1895; and the entire rainfall in 1896 (26.633 inches) was less than the rainfall of 1895 by 0.368 of an inch.

The proportion of deaths under 1 year to each 1000 births, in 1896 (143) is higher than in the four years 1892-95 (131). Of the 168 deaths of infants under one year old recorded in 1896, there were 36 from atrophy and debility, 26 from diarrhoea, 21 from premature birth, 19 from convulsions, 10 from bronchitis, and 7 from enteritis.

Of those who died in 1896, there were 132 over 65 years of age—that is 21.5 per cent.

Ten out of the whole number of deaths were not certified by a registered medical practitioner or coroner—that is, 1.63 per cent. Forty-seven inquests were held during the year—that is, 7.6 per cent. of the deaths were certified by a coroner.

The principal zymotic diseases caused 64 deaths, viz. :—4 measles, 4 scarlatina, 3 diphtheria, 3 membranous croup, 10 whooping-cough, 10 typhoid fever, and 30 diarrhoea. The exact locality in which each of these occurred is indicated on a map, a distinguishing mark being allotted to each disease. The death-rate from the principal zymotic diseases in 1896 (1.5) is 0.3 below the mean in the four years 1892-95.

Infectious Diseases.—The number of cases of infectious disease notified under the Infectious Disease (Notification) Act, in 1896, was 359, viz. : 157 scarlatina, 30 diphtheria, 5 membranous croup, 113 typhoid fever, 4 puerperal fever, and 50 erysipelas.

Measles was the registered cause of 4 deaths—1 being in January, 1 in May, and 2 (in the same house) in July. The deaths all occurred at Seacombe, and those who died were all under 5 years of age.

Scarlatina.—As there were 157 cases and but 4 deaths, the mortality was about 2·5 of the notified cases. One death was at Seacombe, in February; 1 at Egremont, in July; and 2 deaths were at Liscard (in the same house) in September. The number of cases notified in the first quarter was 45, in the second 20, in the third 45, and in the fourth 47. Fifty-five of the whole number of cases were children under 5 years of age.

Diphtheria and Croup.—There were 3 deaths recorded as from diphtheria, and 3 recorded as from croup. The mortality of these taken together was, therefore, 17·1 of the notified cases. One death was at Egremont, in March; 1 at Liscard, in August; 2 were at Seacombe, in November; 1 was at Liscard and 1 at Seacombe in December. Eight out of the 35 notified cases were children under 5 years of age. There was no special grouping of cases in any locality, no apparent connection with the milk-supply, and the disease was not spread by any school. At several houses where cases occurred were foul privies or ash-pits; and at several an escape of sewer gas was noticed from defective joints or choked drains.

Whooping-cough was registered as the cause of 10 deaths, 1 being in June, 1 in August, 1 in October, 4 in November, and 3 in December. The first death was at Seacombe, the 3 last deaths were at Wallasey, the others were at Liscard. All but one of those who died were under 5 years of age.

The disease prevailed so extensively in the village of Wallasey at the close of the year that on December 1st the Medical Officer of Health advised the closing of the Day and Sunday Schools. This was done, and the Schools were not re-opened till towards the end of January, 1897.

Diarrhoea.—This disease, in common with measles and whooping-cough, is not required to be notified, so the number of cases is not known. As there were 30 deaths recorded from diarrhoea, the death-rate is equal to 0·72 per 1000 living—a high rate. One case was in March, 3 were in June, 12 in July, 10 in August, 2 in September, 1 was in October, and 1 in November. Thus five-sixths of the mortality occurred during the three months when the temperature was highest—June, July, and August. All the 30 deaths were of children under 5 years of age. Twenty were in Seacombe, 6 in Liscard, 2 in Wallasey, 1 was in Egremont, and 1 in Poulton.

The heavy rainfall towards the end of August, and in September and October, and the fall in temperature doubtless prevented a continuance of this mortality.

In this connection the Medical Officer of Health points out that 11 deaths were ascribed to enteritis, and that 7 of these were deaths of infants under one year old, which took place in July and August. These 7 were practically deaths from the summer diarrhoea of infants.

In the Report for 1895 it was stated that the small area of Oakdale, Wheatland Lane, and the streets leading out of Wheatland Lane, suffered far more severely from diarrhoea and enteritis than other parts of the district. In 1895, out of 58 deaths ascribed to these causes, 25 occurred in this area. In 1896, out of 41 deaths ascribed to these causes 16 occurred in this area. As far as one can judge from the records of a single year the reconstruction of the drainage of Oakdale seems already to have borne good fruit.

Typhoid Fever.—The remarks on this disease naturally follow those on diarrhoea. The localities in which the 113 cases of typhoid fever occurred, and the months in which the notifications were received are best shown in tabular form.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	1896.
Seacombe 0	2	0	4	8	0	3	0	6	9	3	4		39
Liscard { Egremont ... 0	0	0	1	0	2	1	0	2	4	4	2		16
Liscard Proper 2	0	0	0	1	1	1	0	0	3	7	0		15
New Brighton ... 1	0	1	0	3	2	3	7	4	4	1	1		27
Wallasey 0	0	1	0	0	1	1	4	1	1	3	4		16
Cases 3	2	2	5	12	6	9	11	13	21	18	11		113
Deaths 1	0	2	0	1	1	0	0	2	0	1	2		10

Thus the largest number of cases were reported in October and November. As regards locality, there were relatively to the population far more cases at Wallasey than elsewhere. The 16 cases in Wallasey are equal to 5.9 per 1000 of the population, the 58 cases in Liscard are equal to 2.7 per 1000, and the 39 at Seacombe are equal to 2.1 per 1000. Twelve of the 113 cases were children under 5 years. Three of the deaths were at Seacombe, 6 were at Liscard, and 1 was at Wallasey.

The 10 deaths are equal to a death-rate of 0.24 per 1000 living—higher than the corresponding death-rate in England and Wales. As typhoid fever is one of the most preventible of diseases, its prevalence in a district furnishes occasion for searching inquiry for the cause of such prevalence. That the disease has been exceptionally prevalent in the Urban District of Wallasey is manifest. The mean typhoid fever death-rate in the ten years 1887-96 is 0.39 per 1000 in this district, while the mean fever death rate (including typhus, typhoid and continued fevers) during the same ten years is only 0.18 per 1000 in the whole of England and Wales—that is less than half the local rate. Clearly there must be some cause for this.

An examination of the localities in which the 113 cases occurred, shows that 6 were in Oakdale (as compared with 9 in 1895) and 12 were in Wheatland Lane and the streets draining into it--5 being in one house, 3 in another, and 2 in a third. Twelve cases were in the lower part of New Brighton, below Grosvenor Road, 3 cases were at Sutton's Cottages, off Mount Pleasant, and several of the Wallasey cases occurred in the neighbourhood of Granville Terrace.

A study of these localities is very interesting, because in them the drainage is known to be bad, or to have been bad recently. For instance, the whole of the sewers of Oakdale have had to be reconstructed within the last two years or so. A good deal has also been done to the drainage of the Wheatland Lane district, but, as was pointed out in the Report of 1895, it may be more than a year after a new sewer is laid before improvement is seen, for when typhoid fever germs have impregnated the ground it takes a long time before the locality is quite free from them. The history of the outbreak at Sutton's Cottages is a good illustration of the connection between typhoid fever and bad drainage. The 3 cases were notified between August 15th and 17th, and the Medical Officer of Health at once communicated with the Surveyor's Department, asking for an inspection of the sewer which runs through the back yards of these cottages. An examination was made at one point, about the middle of the sewer, and it was reported to be in good condition and running freely. Owing to various defects in the sanitary fittings of the cottages where the fever occurred, discovered by the Inspector, he had an interview with the Agent of the property, who agreed to put in proper fittings and relay the whole sewer. When the work of relaying began, it was found that the sewer at the back of the houses in which the fever occurred was blocked and badly jointed, and that some of the pipes were broken. The surrounding ground was impregnated with sewage, which was actually trickling into the cellars of two of the houses. There can be no reasonable doubt that this outbreak was due to the condition of the drainage. It is obvious also that an inspection of a sewer at one point is no ground for inferring that it is in good condition all along.

The Medical Officer of Health states that his list of defects found at houses in which typhoid fever occurred "is far too lengthy to be reproduced." These defects include choked drains, bad joints allowing escape of sewer-gas, deficient trapping, &c. Notices were served to remedy all these.

The typhoid fever prevalent in 1896, appears to have been of a milder type than in some recent years, for the percentage of the notified cases which proved fatal was only 8.8. No outbreak during the year could be traced to the water or milk supply. Nor can it be said that the disease was largely imported from Liverpool.

Influenza prevailed in a somewhat mild form, still it was the cause of two deaths in March.

Alcoholism.—Intemperance was certified as the cause of two deaths, and delirium tremens as the cause of five.

Phthisis was certified as the cause of 43 deaths. This is equal to death-rate of 1.03 per 1000 living.

Precautions taken against Spread of Infection.—

As has been usual, in all cases of infectious disease notified, notices were sent to the School Authorities if any member of the infected household attended school. Careful disinfection of infected premises and articles is carried out by the District Council's Officers. As soon as the notification is received, the Inspector visits the house and leaves a printed slip with directions. The milk supply is also carefully watched. The premises are examined for defects, the drains are specially flushed, and disinfectants poured down them. Where cases cannot be properly isolated at home they are removed to hospital.

Isolation Hospital accommodation is provided at Mill Lane, and was very much used in 1896. In all 145 cases were admitted. The number admitted in 1895 was 85, and the number admitted in 1894 was 99. Particulars of the cases treated in 1896 are as follows:—

	Scarlatina.	Typhoid Fever.	Diphtheria.	Erysipelas.	Measles.
Poulton-cum- Seacombe }	29 (3 deaths)	29 (1 death)	2	1	3
Egremont ...	4	8 (1 death)	2	...	...
Liscard proper	12	16	...	1	...
New Brighton	9	11 (2 deaths)	2	1	...
Wallasey ...	6	6 (1 death)	2	1	...
	—	—	—	—	—
Total ...	60	70	8	4	3

Two or three cases entered as typhoid fever proved to be cases of some other feverish attack, or simple diarrhoea.

There were thus 8 deaths, viz: 3 from scarlatina and 5 from typhoid fever—a percentage of only 5.5. This is a small proportion of deaths, considering the very serious nature of many of the cases, and speaks well for the good accommodation the Hospital affords, and the skilled nursing and care the patients receive.

The benefit of isolation can hardly be estimated, but the records of notifications show that in many houses where the patient was not sent to Hospital several other cases occurred. For example, at a house in Windsor Street, where those in charge would not allow their children (attacked with scarlatina) to be removed to Hospital, six cases followed in rapid succession.

No doubt typhoid fever and scarlatina were much limited in 1896 owing to the prompt removal to Hospital of early cases.

The new wing, referred to in the last Annual Report as in course of erection, has proved of the greatest service. This is an addition to the administrative block and was rendered necessary to accommodate the permanent nursing staff which was increased during 1896. Before this improvement was effected it was frequently necessary to engage temporary nurses, and there was much difficulty in housing them. The present nursing staff consists of a matron and six nurses.

During the year a Berthon tent, made of wood with canvas roof, has been erected in the hospital grounds. It is adapted to receive 4 patients and it is thought may prove useful in the event of isolated cases of small-pox or typhus fever arising.

Proposed improvements in Sewerage—A “Report on the Sewerage System of the District, together with Particulars Relative to the Condition of the Sewers and Suggested Improvements in the same” prepared by the District Engineer and Surveyor, was presented in November, 1895. This certainly shows that the Medical Officer of Health has not exaggerated in his statements with reference to the defects of the local sewers, and he is pleased to record that toward the close of 1896 the District Council resolved to spend about £30,000 for improvements in sewerage. He regards it as the most important step in connection with the sanitary condition of the district that has been taken for twenty years or more. Nor is this work all the District Council are going to do. “The usual rectification of sewers throughout the district” will be continually going on. “The large scheme recently approved simply applied to certain main sewers, and would not,” said the Chairman of the Works Committee in January, 1897, “at all supersede work, &c., in other directions. which would go on as heretofore, and probably with increased energy.”

Defective Sewers and Drains.—With the near prospect of reconstruction of many sewers, the Medical Officer of Health specially recommends that the low-lying portion of New Brighton may be speedily attended to. It has suffered for years from typhoid fever, and a thorough remodelling of the sewers and house-drains in this part will well repay the expenditure. The streets particularly referred to are Egerton Street, The Avenue, Tollermache Street, and all the roads leading from Victoria Road toward the north. That portion of Seabank Road sewer between Sandfield Road and Manor Road also needs early attention, as well as the sewer in Wallasey Village, between Grove Road and Leasowe Road.

Roads in bad condition.—The Medical Officer of Health remarks on the disgraceful condition of some of the roads of the district. Even before they are adopted by the Council, some arrangement should be come to with the owners by which they

might be made passable, and prevented from becoming a quagmire and positively dangerous. St. George's Road, Wallasey, Radnor Drive and Hertford Drive may be cited as examples of these bad roads. The two latter have been in this state for some years, and St. George's Road for many years back.

Increase of Staff.—Owing to additional work thrown on the Department, partly by the growth of the district, and partly by new duties transferred to the Sanitary Authority, it was found necessary to appoint two new Inspectors during 1896. As there was no accommodation for them at the District Council's Offices, a small house has been rented at 13, Church Street, and will soon be occupied. A temporary Assistant has also been engaged to help in taking the measurements of the factories and workshops, and of the rooms in houses let in lodgings.

Bye-laws for Houses let in Lodgings.—These bye-laws, referred to in the last Annual Report, have been quite recently sanctioned by the Local Government Board.

Refuse removal.—The collection of night-soil has again, as in former years, caused trouble. The Contractor has frequently created a nuisance by emptying during the day ashpits situated in localities scheduled for night emptying. Such nuisances will probably cease when the Council has its own scavenging staff. The stabling and other buildings to accommodate plant enabling the Council to collect the night-soil by means of their own employés and horses, are at present in course of erection, and should be ready for use before the end of 1897.

The Destructor for the cremation of refuse, situated in Gorsey Lane, which was opened in June 1895, is now being added to. The six cells are to be supplemented by six more.

Drain-flushing.—The systematic flushing of house-drains has been carried on as usual throughout the year. There is also special flushing of the drains of houses where infectious disease is notified.

A Special Report was presented to the Health Committee in September on the Hermite system, as employed at Ipswich, with a view to its possible application to the sewers of the Wallasey Urban District.

Vaccination Returns.—These refer to 1115 births registered during the year ending June 30th, 1896. The particulars are supplied by Mr. Stewart, Vaccination Officer.

Successfully vaccinated	...	..	...	968
Unsusceptible	...	..	...	3
Died under vaccination age	..	..	..	103
Postponed by medical certificate	...	..	..	19
Removed and traced	...	..	..	5
Removed and not traced	...	..	..	13
In default	...	..	..	4
Births registered				1115

This shows that only a percentage of 1·5 escaped vaccination. Even this small proportion is largely due to removals from the district. While children born in Wallasey are thus carefully looked after, there is no guarantee that children coming into the district with their parents are protected from small-pox.

Water supply.—Particulars of the amount of water pumped and its distribution are supplied by Mr. J. H. Crowther, the Gas and Water Engineer. The average quantity used per head per day, in 1896, was 38.19 gallons, divided as follows:—

			Gallons.
Watering streets and road-making	...	...	0·39
Supplied by meter	...	...	5·73
Supplied to shipping	...	...	0·06
Flushing sewers by hose	...	...	0·84
Domestic and other purposes, including drinking fountains, gardens, &c, by assessment	...	31·17	

The quantity of water used for flushing sewers, during 1896, was 13,877,296 gallons.

The Chief Sanitary Inspector, Mr. H. C. Bascombe, furnishes information on matters coming under his supervision.

Nuisance Abatement.—The number of notices issued for the abatement of nuisances was 1044. The nuisances abated were the result of insufficient drains, defective drains, choked drains, broken water-fittings, no supply or insufficient supply, house drains directly connected, waste-pipes directly connected, waste-pipes untrapped or badly arranged, soil-pipes not ventilated or ill-ventilated, rain-pipes directly connected, defective rain-conductors or roofs, defective traps, offensive accumulations, defective ash-pits, privies and W.C.'s, defective cisterns, offensive ponds, yards lodging foul water, damp walls, dirty or overcrowded houses, animals so kept as to be a nuisance, &c. There were three works at which smoke nuisances were observed. These appeared to be due to careless stoking or the use of an inferior quality of fuel. Among the alterations required for the abatement of nuisances was the conversion of 122 privies into water-closets. The number of letters written, referring to nuisances and other matters, was 1652.

Offensive Rain-water Cisterns.—At four houses have been found underground cisterns, in an offensive state, which have been dealt with as nuisances. One of these cisterns, in a house in Rake Lane, Liscard, was very large, and from it were removed 6 hand barrow-loads of a black muddy deposit. This cistern was partly under the kitchen.

Shore Nuisance.—Towards the end of August there was a nuisance from the barge "Ajax" put on the beach near New Brighton for the purpose of being cleaned. She was wrecked, and on its being represented that the wreck had become a nuisance it was broken up and cleared away.

Complaints of Nuisances.—There were 743 special complaints received. In 673 of these cases, notices were served. In 66 cases what was complained of did not warrant the serving of notices. In four cases the nuisances were due to tenants' neglect, and they were required to abate the nuisances.

Drain Testing.—A considerable portion of the Inspector's time is taken up in testing house drains and fittings, and according to his experience the value of such testing cannot be overestimated. He makes use of the usual smoke-testing machine, or the so-called "rockets," or the water test, as occasion requires. During the year he thus tested the drains and sanitary fittings of 123 houses.

Sanitary Accommodation at Schools.—The sanitary arrangements at the Rock Schools, Liscard, have been much improved and added to. All is now in good order; but the playground being of loose sand, the various gullies will require frequent clearing or they will get choked. The Infant School, School Lane, Wallasey, was inspected, and a notice served on the Chairman of the School Committee to remedy various defects noted—among these being offensive privies for the use of the scholars. Nothing has been done with the exception of levelling the playground.

Courts and Back Passages.—Attention has been drawn in previous Reports to the dirty condition of these, throughout the district. As yet nothing further has been done with a view to having them systematically scavenged.

Insanitary Property.—Field Cottages (5), owing to the state of the trough-closet belonging thereto, were scarcely fit for habitation, and the owner was served with a notice to put the property in order. After much delay (and not before the owner was summoned and fined) the necessary work was done. In the last Annual Report it was stated that the negotiations with the owners to obtain the demolition of Brewer's Buildings had not been attended with success. This block of back-to-back houses still stands. There were two cases of typhoid fever and there was one case of scarlatina at these buildings in 1896. Notices have been served for the conversion of the privies into water-closets and for other works, but nothing has been done except that some of the houses have been lime-washed.

Disinfection.—Infected houses or rooms have been disinfected thoroughly with sulphur fumes, and the steam disinfecter is in constant use for the disinfection of bedding and clothing. A van is employed for removing infected articles and another for returning the articles after disinfection. In all 2065 articles of clothing, &c., and 226 beds and mattresses were dealt with.

Workshops.—These are being measured, and a list will be prepared and arrangements made for their systematic

inspection. In the case of one workshop visited (a tailor's), it was found to be ill-ventilated and overcrowded. The occupant was required to provide proper ventilation and reduce the number of inmates.

Bakehouses.—Many bakehouses have been inspected. In one the ground water was found running over the floor owing to the site not having been properly drained. The floor has since been channelled to a gully-trap outside. Another bakehouse was found to be very dirty, and the owner could not be got to limewash it till legal proceedings were instituted. The work, however, was not then properly done. Eventually the occupier left, and the premises were no longer used as a bakehouse. Another bakehouse, when visited, was found to be flooded with water from adjoining premises. Two water taps were leaking, and water from these and a bath waste-pipe and sink waste pipe were percolating through the bakehouse wall. Notice to remedy defects on adjoining premises has been served, and as it has not been complied with, legal proceedings will be taken.

Unsound Meat, &c.—As usual, a large amount of meat has been seized at the Foreign Animals Wharf, Wallasey and Alfred Docks. The premises of the butchers in various parts of the district have also been carefully inspected, and a small proportion of the unsound meat seized came from these premises. The entire quantity seized was as follows :—

Beef	...	...	...	...	62517 lbs.
Mutton	...	...	...	...	13058 $\frac{1}{2}$ „
Veal	..	...	..	...	5792 „
Pork	...	...	...	...	316 „
Offal	...	...	...	...	20726 „

Total seized in 1896 ...102409 $\frac{1}{2}$ lbs.

No proceedings were taken other than applications to Magistrates for orders to destroy the meat and offal seized. The stuff is destroyed at the Manure Works, Old Potteries, Seacombe.

Dairies, Cow-sheds, and Milk-shops.—There are in the district 24 cowkeepers, 20 dairymen, and 46 milk-shop keepers. These have all been carefully inspected, and notices served when defects have been found to exist. Of the cow-sheds, 15 did not comply with all the regulations ; of the dairies, 12 did not comply with all the regulations ; and of the milk-shops, 14 did not comply with all the regulations. During the year 12 cowkeepers or purveyors of milk discontinued business in the district. Two unregistered cowkeepers were discovered.

Offensive Trades.—The two knackers' yards in the district have been periodically inspected. Business has been conducted in a satisfactory manner, but on one occasion notice

had to be given to remove carcases kept on the floor for longer than necessary. The Manure Works, at the Old Potteries, have also been periodically inspected. Business has been conducted in a satisfactory manner, every possible precaution being taken to prevent nuisance.

Canal Boats.—During the year 71 boats were inspected. The condition of 12 boats was found to be in contravention of the Canal Boat Acts and regulations. In 10 cases the master failed to produce the certificate of registration, in 10 cases the boats were not properly lettered, marked and numbered, and the cabin of four boats required painting. One of the boats was not duly registered. Generally, the boats presented a clean and tidy appearance.

WILMSLOW.

Urban District.

Medical Officer of Health—DR. T. A. SOMERVILLE.

Population at Census, 1891—6344.

Estimated Population in middle of 1896—6741.

Area in Acres—5103.

Birth-rate per 1000 living—27.5.

Death-rate per 1000 living—11.5.

Death rate from seven principal Zymotic Diseases—0.8.

Deaths under one year to 1000 births—69.

This Urban District is formed of part of Fulshaw, part of Bollin Fee, and part of Pownall Fee. The area and population of these three portions of the district appear to be as follows:—

	Area in Acres.	Population at Census.
Part of Fulshaw ...	3088	1230
Part of Bollin Fee ...	...	2860
Part of Pownall Fee...	2015	2254

During 1896 the number of births registered in the district was 186, and the number of deaths registered in the district was 78. Seven of those born were illegitimate. The birth-rate for 1896 was 0.2 below the mean birth-rate in 1892-95, and the death-rate for 1896 was 2.6 below the mean death-rate in 1892-95. The proportion of infants who died was very small. The proportion of old people among those who died was large—25 were upwards of 65 years of age.

Seven deaths were ascribed to zymotic diseases, viz.: 1 diphtheria, 1 typhoid fever, 1 puerperal fever, 2 measles, 1 whooping-cough, and 1 diarrhoea. There were also 7 deaths from phthisis, 17 from bronchitis and pneumonia, 10 from heart disease, and 3 from injuries.

Infectious Diseases.—Twelve cases of infectious disease have been notified, viz.: 5 scarlatina, 1 diphtheria, 4 typhoid

fever, 1 puerperal fever, and 1 erysipelas. Due precautions were taken to prevent the spread of disease, with the result that in no instance did two cases occur in one house.

Water-supply.—The water supplied by the Stockport Water Company was at one time a cause of numerous complaints. Latterly, except for its hardness, it has been satisfactory.

Bakehouses and Slaughter-houses have been inspected as usual, and were found to be in a satisfactory condition. The Medical Officer of Health is still of opinion that it would be an advantage to have a public slaughter-house outside the town.

Lodging-houses have also been inspected and found to be in good order.

Drainage Schemes.—The Southern Drainage Scheme continues to work well. Numerous houses have been connected therewith. The Northern Scheme is virtually complete, and already 104 houses have been connected.

Proposed Isolation Hospital District.—The Wilmslow District Council has with other District Councils applied to the Local Government Board for the formation of a Hospital District. There is therefore a prospect of the long needed accommodation for infectious cases being supplied.

WINSFORD.

Urban District.

Medical Officer of Health—
 to March, 1896, the COUNTY
 MEDICAL OFFICER,
 after March, 1896,
 DR. T. W. H. GARSTANG.

Population at Census, 1891—10440.

Estimated Population in middle of 1896—10605.

Area in Acres—5780.

Birth-rate per 1000 living—36.1.

Death-rate per 1000 living—14.9.

Death-rate from seven principal Zymotic Diseases—1.8.

Deaths under one year to 1000 births—133.

This Urban District consists of the Parishes of Over and Wharton. The area and population at the date of the Census are given as follows:—

	Area in Acres.	Population at Census.
Over	4527	6835
Wharton (including Gravel Lane)	1253	3605

As there was some difficulty in estimating the population for the middle of the year 1896, the Assistant Overseers of Over and Wharton were appealed to. The estimate for Over

thus obtained was 7000, and the estimate for Wharton thus obtained was 3605—that is to say, during $5\frac{1}{4}$ years the population of Over has increased by 165, and the population of Wharton has not increased. The explanation given is that this is probably due to depression in the salt trade.

During 1896, the number of births registered in this district was 383, and the number of deaths registered (including 3 which occurred in the Workhouse in the Northwich Urban District) was 158. The birth-rate is 0.3 below the mean birth-rate in 1892-95, and the death-rate is 2.5 below the mean death-rate of 1892-95.

The number of births registered in the first quarter was 92, in the second 106, in the third 93, and in the fourth 92. The number of deaths registered in the first quarter was 38, in the second 50, in the third 37, and in the fourth 33.

Infantile Mortality.—Fifty-one of the deaths recorded were of infants under one year old, viz.: 15 convulsions, 12 premature birth, debility or marasmus, 11 bronchitis and pneumonia, 4 diarrhoea, and 9 other diseases. Of the 6 deaths, the causes of which were uncertified by a medical practitioner and not investigated by the Coroner, 5 were infants.

Infectious Diseases.—The number of cases of infectious diseases notified was 197, viz.: 173 scarlatina, 3 diphtheria, 1 membranous croup, 1 typhoid fever, 2 puerperal fever, and 17 erysipelas. The number of cases notified in the first quarter was 64, in the second 69, in the third 40, and in the fourth 24. The deaths from notifiable diseases were 11, viz.: 7 scarlatina, 3 diphtheria and croup, and 1 typhoid fever.

Scarlatina was epidemic in the district, and widely spread, 103 of the notified cases being in Over, and 70 in Wharton. The disease attained its maximum of prevalence in March when 30 cases were reported, and in April when 29 cases were reported. In Over there were 29 cases in High Street, 15 in Weaver Street and branch streets, 8 in Delamere Street, 6 in Way's Green, 7 in Gladstone Street, and 8 in John Street. In Wharton, there were 15 cases in School Road, 11 in Wharton Road, 10 in Station Road, 9 in Crook Lane, and 7 in Ledward Street. One died in February, 1 in March, 2 in May, 1 in June, and 2 in October. One of those who died was 6 years old, the remainder were under 5 years.

Diphtheria and Croup.—A child, aged 3 years, was certified as having died of membranous croup in William Street, Over, in January, but no notification of this was received. The only case notified as croup also died, and of 3 cases notified as diphtheria 1 case died. All the notified cases occurred in Wharton, 2 in May, and 2 in June. The first 2 (aged respectively 25 and 23 years) were in one house in Station Road. Both recovered. The others (aged respectively 8 and 10 months) were in separate houses in Princess Street, and both died.

Typhoid Fever.—The only case of this disease (a man 29 years old) occurred in April, and proved fatal.

Puerperal Fever.—A case of this disease was notified in August, and another in September. Both recovered. Cautions were addressed to the nurses in attendance.

Erysipelas.—The 17 cases notified all made a good recovery. The ages of the patients ranged from 10 years to 71 years.

Zymotic Mortality.—The number of deaths from the principal zymotic diseases was 19, viz. :—7 scarlatina, 1 diphtheria, 2 membranous croup, 1 typhoid fever, 3 measles, and 5 diarrhoea. This is equal to a zymotic death-rate of 1.8 per 1000 living. The mean zymotic death-rate in 1892-95 was 1.9. The deaths from measles occurred in January, February and August, those who died being 3 years old and under. Three of the deaths from diarrhoea occurred in July and August, 1 death was in January, and one in April. One was 3 years old, 4 were infants under 6 months.

Action taken to prevent spread of Infection.—Isolation has been enforced more rigorously and for a longer period than previously. Disinfectants are supplied and the infected room is ultimately fumigated with sulphur. As regards sulphur fumigation the Medical Officer of Health has satisfied himself that in the opinion of experts its efficiency as a method of disinfection is far inferior to spraying with a solution of perchoride of mercury. Accordingly, on August 5th, he recommended the adoption of this improved way of disinfecting rooms. The District Council has not yet sanctioned the purchase of the needful apparatus. For the disinfection of bedding, clothes, &c., which can only be satisfactorily disinfected by steam, there is no provision.

On September 23rd the District Council accepted the advice of the Medical Officer of Health to offer to disinfect after deaths from phthisis. Even if in many cases the offer be refused, there will be a good effect from the Authority having given practical intimation that phthisis is infectious. Greater care in adopting hygienic measures will diminish the number of preventable cases of this common and fatal disease.

In May, owing to cases of measles, among the scholars, the Meadow Bank School was closed for ten days; and in October, owing to cases of scarlatina among the scholars, the Delamere Street School was closed for twenty days.

Prosecution for exposure of an Infectious Child.—In November a prosecution was instituted at the Over Petty Sessions, for exposing a child while infectious owing to its having scarlatina. A conviction was obtained and a nominal fine inflicted.

Hospital provision.—The small wooden Hospital belonging to the District Council has been repaired during the year and maintained in readiness to receive any case of small-pox or cholera reported. As no such case has occurred, it has not been brought into use.

Pressure is being exercised by the County Council to induce the four Authorities in the Northwich Union to form a Hospital District and make joint provision, but no agreement has been arrived at.

Influenza.—One death from this disease occurred in April, and a second in October. The ages of those who died were respectively 73 years and 69 years.

Deaths from Injuries.—There were only 2. One was due to accident, the other to suicide by hanging.

Inspection.—Mr. Ralph Oakes, the Sanitary Inspector, reports that the whole district has been inspected twice. Notices have been served resulting in the re-building of 21 closets and the repair of 112 cesspools. Nightsoil is removed and closets are cleaned 3 times a year, and ashpits are cleansed every month. This work is done by the employés of the Council, and supervised by the Inspector. The sewers are also regularly flushed and disinfected.

Privies and Cesspools.—The Medical Officer of Health states that there is serious pollution of soil in the district, owing to ill-constructed privies and cesspools. Sooner or later the District Council will have some more modern and hygienic system of excrement disposal.

Sewage Works.—The system adopted for filtering the sewage in this district is unique, but there is reason to believe that it gives fairly good results. The filters were inspected by the County Medical Officer in November.

Common Lodging-houses.—There are 4 common lodging-houses. These have been regularly inspected and found to comply with the regulations.

Water-supply.—The water supplied to the district is abundant and of good quality.

Slaughter-houses.—There are 19 registered slaughter-houses, and all are regularly inspected.

Unsound Meat.—On May 2nd, a carcase of a tuberculous cow was seized and destroyed. The case against the owner was dismissed, owing to technical irregularity in the proceedings. On September 4th, a similar carcase was seized and destroyed. In connection with this case, the owner was convicted and fined 10/- and the license of his slaughter-house revoked. On November 14th, 119 lbs. of meat were seized in the Market and destroyed. A conviction was obtained and fines of £5 and £3 imposed. On

December 9th, another carcase of a tuberculous cow was seized and destroyed. A conviction was obtained and a fine of £20 imposed. The Medical Officer of Health hopes that the progressive increase in the fines will have a deterrent effect.

Canal Boats are inspected, but very few come to Winsford. Three-fourths of the vessels trading in the river Weaver are registered under the Merchant Shipping Act.

YEARDSLEY-CUM-WHALEY.

Urban District.

Medical Officer of Health—DR. H. ALLEN.

Population at Census, 1891—1235.

Estimated Population in middle of 1896—1235.

Area in Acres—1323.

Birth-rate per 1000 living—25·1.

Death-rate per 1000 living—23·4.

Death-rate from seven principal Zymotic Diseases—0.

Deaths under one year to 1000 births—193.

In this Urban District, which includes Bridgemont and Stoneheads, the births registered numbered 31, and the deaths registered numbered 29. In 1896, the birth-rate was 5·6 below the mean birth-rate in 1892-95, and the death-rate was 10·5 above the mean death-rate in 1892-95. Six of the deaths were of infants under a year old—a large proportion. Eight deaths were due to bronchitis or pneumonia, 2 were due to heart disease, and one was due to phthisis.

Infectious Disease Notified.—During 1896 the Infectious Disease (Notification) Act was adopted, the Act coming in force on October 1st. Between that date and the end of the year the only case notified was one of typhoid fever, which was imported into the district. Two other cases of infectious sickness came to the knowledge of the Authority, a case of scarlatina and a case of diphtheria. All these cases terminated in recovery. With the exception of whooping-cough, which was prevalent during the summer and autumn, the district was remarkably free from infectious disease.

Inspection and Nuisance Abatement.—The district has been duly inspected by the Medical Officer of Health and Inspector, and steps taken for the abatement of nuisances discovered. In particular the provision of rain-gutters and down-spouts in many cases has been required, the substitution of properly jointed drains for defective drains has also been required, as well as the trapping of sink waste-pipes.

Water-supply.—In the Report of 1895, it was stated that Col. Cotton-Jodrell, J.P., had made a reservoir at Stoneheads and provided a supply for a part of the district.

Since then a scheme has been under the consideration of the District Council for joining the Councils of Chapel-en-le-Frith, Macclesfield, Disley, and New Mills, so as to obtain an adequate supply for the remaining part of this district. The scheme is to impound water flowing through the Ladbrick Wood in the parish of Taxal, which is known to be abundant and of excellent quality, and to distribute it to the district named. It is certainly most desirable that a proper water-supply should be available.

Proposed Scheme for Sewering part of District.—

In 1895 the District Council agreed with two neighbouring Authorities to obtain a Report upon a joint scheme for sewerage such parts of the districts as could be most conveniently dealt with at one outfall. This Report has now been submitted, and the scheme has been approved, but it has yet to obtain the sanction of the Local Government Board.

BUCKLOW.

Rural District.

Medical Officer of Health—DR. T. W. H. GARSTANG.

Population at Census, 1891—20368.

Estimated Population in middle of 1896—21527.

Area in Acres—58925.

Birth rate per 1,000 living—22·8.

Death-rate per 1,000 living—13·6.

Death-rate from seven principal Zymotic Diseases—0·8.

Deaths under one year to 1,000 births—99.

During 1895 the Rural District was reduced by the formation of the two new Urban Districts of Ashton-upon-Mersey and Knutsford, as follows:—

			Area in Acres.		Population at Census.
Rural District	...	...	62307	..	29245
Deduct:					
Ashton-upon-Mersey...			1622	...	4234
Knutsford	...	...	1760	...	4643
			58925		20368

The number of births registered in the district (thus reduced) in 1896 was 491. The number of deaths registered in the district (thus reduced) in 1896 was 283. Eleven of these deaths occurred in St. John's Home (Consumption Hospital), Dunham Massey, 6 of which belonged to Manchester, 1 to Salford, 1 to Oldham, 1 to Bury, 1 to Blackpool, and 1 to Dukinfield. These have been reported to the respective Medical Officers of Health of the places named, and are deducted from the 283 deaths registered. There are, however, to be added

17 deaths which took place in the Union Workhouse (Knutsford) and 4 deaths which took place in Altrincham General Hospital. The number of deaths therefore belonging to the district, in 1896, was 293. Eighteen of the births registered in the district, in 1896, were illegitimate.

For registration purposes, the district has been divided into four sub-districts. These are as follows :—

- 1.—Altrincham, having an area of 13143 acres, and an estimated population of 9985. It includes Baguley, Timperley, Hale, Ashley and Dunham Massey.
- 2.—Lymm, having an area of 14497 acres, and an estimated population of 3150. It includes Carrington, Partington, Bollington, Warburton, High Leigh, Agden, Mollington and Ashton-by-Budworth.
- 3.—Knutsford, having an area of 20810 acres, and an estimated population of 3584. It includes Tabley (Superior and Inferior), Mere, Rotherne, Tatton, Marthall, Peover (Superior and Inferior), Ollerton, Toft, Bexton, Plumley and Pickmere.
- 4.—Wilmslow, having an area of 10475 acres, and an estimated population of 4888. It includes Styal, Mobberley, Northenden and Northern Etchells.

The birth-rates of these four sub-districts were respectively 22.5, 22.5, 25.1 and 21.8. The death-rates of these four sub-districts were respectively 11.9, 14.2, 13.3 and 16.8.

The number of deaths from the principal zymotic diseases was 17; viz :—5 diphtheria, 1 membranous croup, 3 typhoid fever, 1 measles, 3 whooping-cough, and 4 diarrhoea. There was also one death from puerperal fever.

Infectious Diseases.—The number of cases of infectious disease notified was 65, viz :—31 scarlatina, 8 diphtheria, 1 membranous croup, 19 typhoid fever, 1 puerperal fever, and 5 erysipelas. The number of cases notified in 1895 was 79, and the number notified in 1894 was 182.

Scarlatina.—Two cases occurred in January at Northenden, in the Wilmslow sub district. In Knutsford sub-district, a case occurred at Pickmere in March (infected from Northwich Rural District), one at Tabley Superior in May, and two cases in one house at Ollerton in May and June. In Lymn sub-district, a case occurred in March and another in August at High Leigh, two cases occurred in one house in July, and two cases in one house, in August, at Carrington (infected from Sale Urban District), and one case at Partington in October. In Altrincham sub-district, Dunham Massey had two cases in April, one in June, and two in August. Timperley had one case in March, three in July and one in November: and Hale had two cases in one house in June, three in August, two in one house in October, and one in November. There was not at any time fear of an epidemic, and no case proved fatal.

Diphtheria and Croup.—These diseases may be considered as practically identical. In Lymm sub-district there was a case at Bollington in April (fatal). The water was analysed and found to be extremely polluted, so the well was closed and a soft water tank substituted. In Wilmslow sub-district there were two cases in the same house at Northern Etchells in June (both fatal). The well-water was found much polluted, and the well has since been thoroughly cleansed and partially lined. The other 6 cases occurred in Altrincham sub-district, one being at Hale in May (fatal), one at Dunham in July (fatal), one at Timperley in November (fatal), one at Dunham in August and one in December, and one at Hale in September. The mortality (two-thirds of the notified cases) is certainly striking. An attempt was made, without success, to obtain the admission of one case into the Infectious Hospital at Altrincham. The cases were so scattered and disconnected, it is not easy to assign their several causes.

Typhoid Fever.—The only case in the Knutsford sub-district was at Ollerton in January. The infection seemed to have been derived from Crewe. At Northenden, in Wilmslow sub-district, were two cases: one occurred in March in a block of property which had previously been reported to the Council as insanitary; the other, in November, was contracted elsewhere. In the Lymm sub-district were two cases at High Leigh, in March: one a man recently arrived from London, and the other on a farm where the water was notoriously bad. There was a case at Partington in the same sub-district, in August (fatal); the water here was condemned on examination, and the well closed. Water has since been obtained from the Manchester mains. Another case occurred at Partington in October and one at Carrington in November. These were also attributed to bad water, and both now share in the new supply. In Altrincham sub-district there was a case at Hale in July (fatal) the cause of which was not ascertained, and a case at Dunham in the same month (fatal) where the drinking water was obtained from a small stream (at the foot of the garden) polluted with sewage. The remaining 9 cases were at Timperley. One, which occurred in June, resulted in the reconstruction of closets, and the erection of vent-shafts to a block of cottages. Three cases in July and one in September (all in one house) were near a sewer-ventilating grid, which was sealed up and replaced by a vent-shaft. The infection was believed by the persons concerned to have been taken at Shudehill Market in the first instance. In July and August were two cases of children who had been sleeping in a room containing a lavatory, where it is possible pipes may have admitted sewer-gas. A case occurring in November was attributed to bad water, and one occurring in December was on premises which were found to be in a terribly insanitary state. No case (except of course those

occurring in the same house) was traced to have connection with any other case. It may be said generally that insanitary conditions were found in most of the cases.

Puerperal Fever.—The only case notified of this disease was fatal. It occurred at Peover Superior in October.

Measles and Whooping-cough.—The number of cases is not known. The only death from measles was at Northenden in March, an infant of 5 months. The deaths from whooping-cough were two at Tabley Inferior in June, and one at Plumley in December; children aged respectively 6 months, 7 years and 3 weeks.

Diarrhoea caused 2 deaths at Timperley (age 1 month and 23 months), and 1 in Dunham (age 69 years) in July, and 1 at Timperley (age 72 years) in August.

Phthisis was the registered cause of 19 deaths. This is equal to a death-rate of 0.83 per 1000 living,

Influenza was certified as the cause of 4 deaths. One occurred at the Workhouse in February—a male of 52 years, belonging to High Leigh. One (an infant) occurred at Timperley in February. A case (42 years) at Dunham in March was complicated with premature labour, and a case (45 years) at Hale in May was complicated with pneumonia.

Action taken to prevent spread of Infection.—All cases notified are promptly visited by the Inspector, and most of them by the Medical Officer of Health also. Instructions are given to isolate the patient as far as practicable, leaflets setting forth the outlines of hygienic treatment are left with those in charge, disinfectants are supplied gratuitously, and the sick-room and infected clothing are eventually disinfected with sulphur. Meanwhile the premises are examined, and any defects or nuisances discovered are made the subject of report to the District Council, and dealt with in due course. If there is any suspicion attaching to the water-supply a sample is analysed. When the patients are school-pupils notice is sent to the school to exclude all children from the infected house.

As regards sulphur fumigation, the Medical Officer of Health has satisfied himself that, in the opinion of experts, its efficacy as a method of disinfection is far inferior to spraying with a solution of perchloride of mercury. Accordingly, on August 12th, he recommended the adoption of this improved way of disinfecting rooms, and the District Council sanctioned the purchase of the apparatus required. The sprayer is somewhat heavy to carry about, but in all other respects it has practically demonstrated its right to the title of the best disinfectant at present known. The efficient disinfection of rooms is thus provided for. The disinfection of bedding, clothes, etc., can only be satisfactorily effected by steam; and for this the District Council have as yet furnished no apparatus. It is probable

that in course of time a steam disinfecter will be provided by the Bucklow Joint Hospital Board, and will, no doubt, be placed at the service of any resident in the Rural District.

On September 23rd, the District Council accepted the advice of the Medical Officer of Health to offer to disinfect after deaths from phthisis. Even if in many cases the offer be refused, there will be a good effect, from the Authority having given practical intimation that phthisis is infectious. Greater care in adopting proper hygienic measures will diminish the number of preventable cases of this common and fatal disease.

Isolation Hospital accommodation.—This subject has been kept well to the front during the year, and good progress has been made. Bucklow Rural District Council and 6 Urban District Councils (those of Alderley Edge, Ashton-upon-Mersey, Knutsford, Lymm, Sale and Wilmslow) made application to the Local Government Board for the formation of a Joint Hospital District, and doubtless, within a reasonable time these Districts will be in possession of a Hospital or Hospitals. During 1896 applications were made to the Rural District Council to remove cases to Hospital, but there being no Hospital provision, nothing could be done. When it is remembered that on October 10th, 1894, the Council permitted their Chairman to resign rather than move in the matter of Isolation Hospital accommodation, the change of opinion which has taken place within two years appears no less astonishing than satisfactory.

For the interval which must necessarily elapse before a Hospital can be erected and made ready for use, a request has been addressed to the Altrincham Urban District Council for permission to make use of their Hospital for cases of emergency under proper arrangements. At the date of writing this, their reply had not been received.

School Closing.—The School at Lower Tabley was closed for a fortnight in June on account of the prevalence of whooping-cough; and the School at Shadow Moss (Northern Etchells) was closed for a fortnight in October owing to an outbreak of contagious skin-disease.

Alcoholism.—Among the deaths in respect of which inquests were held, was 1 due to alcoholism.

Water-supply.—The Townships of Partington and Carrington are now supplied by the Manchester mains. Some Townships are badly off for water, and their development is hindered owing to this. The District Council have not hitherto exercised their powers to provide any public supply. A possible site for public water-works has been under consideration by the Medical Officer of Health, and the question of providing a public supply will be brought before the Council.

Water Analysis.—Four samples of water have been submitted to the County Analyst, and all were condemned.

The Medical Officer of Health analysed 20 samples (new supplies, or owing to suspected pollution or illness on premises), of which 10 were found to be bad or very bad, and 4 were of doubtful purity. The Medical Officer of Health also analysed 25 samples of water within the district for private persons. Of these 14 were found to be bad or very bad, and 4 were of doubtful purity.

Pollution of a Brook.—The pollution of Timperley Brook by waste matters from a Steam Laundry has been complained of, and formal notices have been served under the Rivers Pollution Prevention Act, 1876.

Refuse Removal.—Besides the areas in Hale and Dunham, where the scavenging is carried out by contractors in the employ of the Council, a new area comprising the whole of Timperley has been formed, and a contract accepted for scavenging it. In the case of Northenden some local opposition caused delay, but the scavenging will be done by contract there early in the new year.

Insufficiency of Staff.—The Medical Officer of Health draws attention to this matter. He points out that the district is 13 miles from north to south and 14 miles from east to west, and that many of the outlying townships are only accessible by road, and these bad. The Inspector's time is largely occupied with his duties as Surveyor, and he has to inspect Workshops, Canal Boats, and Hackney Carriages, so that he much needs assistance. In the neighbouring Rural District of Northwich it has been found necessary to appoint an Assistant Inspector, and both officers are fully occupied. An Assistant Inspector is required for the Bucklow Rural District.

The Surveyor and Inspector (Mr. McKenzie) furnishes information as to matters coming under his supervision. The whole district has been regularly and systematically inspected throughout the year.

Extension of Sewers, &c.—The rapid increase of population at Hale (East Ward) and Dunham (Broadheath) renders extensions of main sewers a pressing necessity. The Hale Scheme, including purchase of land for outfall, promises to be costly. The main sewer from Washway Road, Timperley, to the outfall tanks will require re-laying.

A difficulty has arisen at Dark Lane Tanks owing to the reception of spent tan-liquor in the sewer, where the natural water is impregnated with iron. The County Analyst characterises this liquor as "chemical refuse," which can be legally excluded from the sewer. An undertaking has been given by the tanner to dispose of the liquor otherwise.

Outfall Works.—There are four Sewage Works for which the District Council is responsible, viz. : Hale, Dunham, Timperley and Northenden. They are inspected by the officers

of the Mersey and Irwell Joint Committee. The monthly reports of analyses give varying results, but on the whole are satisfactory.

Nuisance at Hale Moss.—The long-standing and recurring nuisance arising from the unfenced and neglected state of this Moss will be abated by the agreement jointly entered into by the trustees of the Stamford Estate, the Rural District Council and the Altrincham Urban District Council. About 25 acres will ultimately be fenced and drained.

Nuisance from Manure Deposits.—The notice-boards erected by the District Council early in the year on the Canal Bank at Timperley have had a good effect in preventing deposits, other than temporary. The Cheshire Lines Railway Co. have also, at the request of the District Council, discontinued the reception of manure on the siding near Victoria Road, Hale.

Overcrowding.—Thirteen cases have been investigated and reported on. A prosecution was undertaken in one case at Timperley, which was successful. Overcrowding is common at Pickmere during the summer months.

New Houses.—Hale, Dunham, Timperley and Northenden have been the scenes of building activity. At Hale a summons was taken out for infringement of bye-laws, a conviction being obtained and a fine imposed. The publication of the case has had a salutary effect. The Surveyor recommends the Council to have all new house-drains tested by the "water test," as a means of saving much time and trouble subsequently.

New Bye-laws, in respect of new buildings and hackney carriages, have been prepared, and the draft is now before the Local Government Board.

The Housing of the Working Classes Act.—In five cases insanitary property has been dealt with under this Act. In each case the property was re-built by the owner without the necessity of legal proceedings being taken.

Workshops.—The Inspector will arrange for the discharge of the duty recently imposed on him—the inspection of workshops. H.M. Inspector of Factories has handed him a list comprising 10 workshops registered in Northenden, 5 in Dunham, 4 in Hale, and 1 in Timperley. It is probable that this list requires revision.

Dairies, Cowsheds, and Milk-shops.—A register has been compiled showing 81 cow-keepers, 108 dairymen, and 49 purveyors of milk. Many inspections have been made of the latter, and various improvements effected in drainage and ventilation of premises. Inspection of cowsheds will be undertaken as opportunity arises.

Canal Boats.—During the year 80 canal boats have been examined in 43 inspections. Carrington Manure Wharf

has been regularly visited, and the boats (considering the nature of the traffic) found in good repair and clean. The 80 boats were registered for 290 adults, and carried 119 men, 13 women, and 7 children. The latter were all under school-age save one (a boy of 9 years) who appeared to be receiving education of a satisfactory nature. In one boat no certificate was producible, and in two boats the markings were insufficient. These were all the irregularities noted, and were subsequently put right. There was no case of infectious disease on board any boat.

CHESTER.

Rural District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—10080.

Estimated Population in middle of 1896—9550.

Area in Acres—35377.

Birth-rate per 1000 living—21.5.

Death-rate per 1000 living—12.6.

Death-rate from seven principal Zymotic Diseases—1.7.

Deaths under one year to 1000 births—97.

This Rural District has for registration purposes been divided into sub-districts, as follows:—

1. Chester Castle, having an area of 10960 acres, and an estimated population of 3722. It includes Christleton, Littleton, Great Boughton, Chester Castle, Marlston-with-Lache, Eccleston, Eaton, Poulton, Pulford, Dodleston, Lower Kinnerton, and Claverton.
2. Chester Cathedral, having an area of 24417 acres, and an estimated population of 5828. It includes Blacon-with-Crabhall, Bache, Newton-by-Chester, Wervin, Croughton, Moston, Upton, Lea, Little Mollington, Great Mollington, Backford, Chorlton-by-Backford, Caughall, Hoole (part of), Mickle Trafford, Bridge Trafford, Pickton, Thornton-le-Moors, Wimbolds Trafford, Dunham-on-the-Hill, Hapsford, Elton, Ince, Stanlow, Great Stanney, Little Stanney, Stoke, Capenhurst, Shotwick, Woodbank, Great Saughall, Little Saughall, and Shotwick Park.

The population as above is exclusive of 695 enumerated at the Census in the County Lunatic Asylum, situated in the Parish of Upton, and 49 enumerated in the Tarvin Union Workhouse, situated in Great Boughton. It is also exclusive of 1137 persons enumerated at Elton, Ince, Stanlow, and Great Stanney, who at the time of the Census were engaged in the construction of the Manchester Ship Canal.

In 1896, the births registered in the district numbered 206, and the deaths (including 12 occurring outside the district but belonging thereto, and excluding 89 in the County Asylum, and 2 in the Tarvin Union Workhouse) numbered 121. The birth-rate is 2·9 below the mean birth-rate in 1892-95; and the death-rate is 1·0 below the mean death-rate in 1892-95.

There were 17 deaths from the principal zymotic diseases, viz. : 1 measles, 8 diphtheria and membranous croup, 6 whooping-cough, and 2 diarrhoea. There was also a death from influenza. There were 2 deaths from puerperal fever, 4 from phthisis, 11 from bronchitis or pneumonia, 16 from heart disease, and 7 from injuries.

Infectious Diseases Notified.—Under the Infectious Disease Notification Act there were reported 72 cases, viz. : 21 scarlatina, 14 diphtheria, 32 typhoid fever, 3 puerperal fever, and 2 erysipelas. Of these, 6 cases of scarlatina and 6 cases of diphtheria were removed to the Fever Hospital at the Chester Infirmary. One of the scarlatina cases notified and 30 of the typhoid fever cases notified occurred in the County Asylum, and all but two of these were treated in the Isolation Hospital belonging to the Asylum. Of the 30 cases of typhoid fever in the Asylum 5 terminated fatally.

The Medical Officer of Health acknowledges the courtesy of Medical Practitioners in responding to the supplementary questions on the notification forms, and in doing all they can to prevent the spread of infection.

The cases of infectious disease occurred at intervals throughout the year, and were mostly scattered in different parts showing no great tendency to spread. The houses where the cases occurred were visited, disinfectants were supplied and measures taken to prevent the attendance at school of children from infected houses, and remove any sanitary defects discovered on premises. In cases where the medical attendant advised removal to Hospital, this was effected under the direction of Mr. Owen, the Inspector.

The cases of puerperal fever were not in any way connected with each other. In these cases the bedding, &c., was destroyed and compensation given.

The number of cases of diphtheria notified was not exceptional, but the proportion which proved fatal was very large.

The outbreak of typhoid fever at the Asylum was formidable, but everything was done to check it and prevent its recurrence, by the Asylum Authorities, who have their own skilled advisers.

The Medical Officer of Health has visited the district frequently, and besides investigating cases of infectious disease, has made general and special inspections.

Water-supply.—Part of the district is supplied from the Chester Water-works, and part from the Wrexham Water-works

while other parts have good well-water. Elsewhere the water is unsuitable or deficient in quantity, and efforts are being made to get the water-mains extended to these parts, but the expense is a serious obstacle. Only one sample of well-water was in 1896 brought to the Medical Officer of Health for analysis, and this proved of very good quality.

The public pumps at Dunham, Ince and Upton have been repaired.

Recent Improvements.—In the townships of Dodleston, Pulford, Eccleston and Eaton a large proportion of the farm-houses and cottages have been entirely rebuilt in a substantial manner during recent years, by his Grace the Duke of Westminster.

Sewering.—The populous part of the district near Chester is sewered in connection with the sewerage of that city, water-closets being ordinarily provided. In the rural parts of the district the sewers are few and rudimentary, and the water-closet is an exceptional accommodation.

The Council have had plans prepared for the sewerage of Christleton, Upton and Boughton Heath, but have not been able to carry out the work on account of the great expenditure involved and the difficulties as to outfall. Work is in hand at Great Saughall for trapping the sewer grids and ventilating the sewer by upright shafts.

The arrangements for the purification of the sewage at Eaton and Eccleston have been working satisfactorily.

Refuse Removal.—The greater part of the district being of a rural character, little difficulty has been found as regards the emptying of privies and ash-pits. A neighbouring farmer is generally willing to undertake the task. However in parts of Boughton Heath (being now much built upon) different arrangements are required; and in the township of Newton the District Council are now, by means of a contractor, removing the ashes and house refuse at short intervals.

Inspector's Report.—The Inspector, Mr. Owen, continues to perform his duties with energy and ability, and progress is being made in the removal of conditions injurious to health. He makes a very complete report of work done during the year. Twenty-nine complaints were received, and 266 houses or premises were specially inspected. In 50 houses, drains were repaired or cleansed, 15 houses were repaired or whitewashed, 5 houses were supplied with water, 5 closets were repaired, 19 accumulations of refuse were removed, and several cases of overcrowding were dealt with.

Dairies, &c.—Eighty-three dairy-farms were inspected, and action taken for the removal of defects as required.

Bye-laws.—The model bye-laws of the Local Government Board, with respect to new buildings are in force throughout

the district, and Mr. Cecil Davis is Surveyor, to examine plans submitted, and see that the bye laws are carried out.

CONGLETON.

Rural District.

Medical Officer of Health { to March, 1896, THE COUNTY MEDICAL OFFICER
after March, 1896, DR. C. H. WENTWORTH-BENNETT

Population at Census, 1891—12505.

Estimated Population in middle of 1896—13000.

Area in Acres—40155.

Birth-rate per 1000 living—25.3.

Death-rate per 1000 living—14.7.

Death-rate from seven principal Zymotic Diseases—0.4.

Deaths under one year to 1000 births—109.

In 1896, the number of births registered in the district was 303. The number of deaths (including a death outside the district and belonging thereto, and excluding 19 deaths, which took place at the Workhouse, of persons belonging to the Borough of Congleton and the Urban Districts of Sandbach, Alsager, Buglawton, &c.) was 192.

The whole district for registration purposes has been divided into 3 sub-districts. These are as follows:—

- 1.—Church Hulme, having an area of 14912 acres, and an estimated population of 3000. It includes Goostrey-cum-Barnshaw, Blackden, Twemlow, Cranage, Leese, Brereton-cum-Smethwick, and Davenport.
- 2.—Congleton, having an area of 7886 acres, and an estimated population of 1131. It includes Somerford, Somerford Booths, Hulme Walfield, Radnor, Newbold Astbury, and Moreton-cum Alcumlow.
- 3.—Sandbach, having an area of 17357 acres, and an estimated population of 8869. It includes Smallwood, Odd Rode, Church Lawton, Hassall, Betchton, Wheelock, Arclid, Bradwall, Tetton, Moston, and Elton.

The birth-rates of these 3 sub-districts were respectively 23.0, 18.5, and 27.0. The death-rates of these 3 sub-districts were respectively 12.3, 15.9, and 15.4.

The birth-rate of the whole district was 5.0 below the mean birth-rate in the four years 1892-95. The death-rate of the whole district was 1.8 below the mean death-rate in the four years 1892-95.

Infant Mortality.—There were 36 deaths recorded of infants under one year old. The number of deaths to each 1000

births was thus 109 in 1896. The number of deaths to each 1000 births in the four years 1892-95 was 115.

Infectious Diseases.—The number of cases of infectious disease notified was 97, viz:—78 scarlatina, 4 diphtheria, 3 membranous croup, 4 typhoid fever, 1 puerperal fever, and 7 erysipelas.

Scarlatina.—Of 78 cases notified, 25 occurred in Church Hulme sub-district, 2 in Congleton sub-district, and 51 in Sandbach sub-district. One death took place at Somerford Booths in the first quarter, and one at Bradwall in the last quarter.

Diphtheria and Croup.—The 4 cases of diphtheria and 3 of croup were all in the Sandbach sub-district. One of those notified as diphtheria died, and two of those notified as croup died.

Typhoid Fever.—Three of the 4 cases of this disease occurred in Sandbach sub-district, and one in Congleton sub-district. All the cases terminated in recovery.

Erysipelas.—Six of the 7 cases of this disease occurred in Sandbach sub-district, and in one in Church Hulme sub-district. One of the Sandbach cases proved fatal.

Measles was very prevalent at Odd Rode during the summer, but there was no death from this disease.

Phthisis was certified as the cause of 12 deaths. This is equal to a death-rate of 0.92 which is not high.

Bronchitis and Pneumonia were certified as the cause of 33 deaths. This is equal to a death-rate of 2.53.

Heart Disease was certified as the cause of 24 deaths. This is equal to a death-rate of 1.84, a high death-rate.

Isolation Hospital.—The little wooden Hospital at Arclid has been kept in readiness. Throughout the winter fires were lighted and the beds well aired. In two or three instances parents were strongly recommended to have their children suffering from scarlatina removed, but declined. Thus the hospital was not used.

Water-supply.—During the year the mains have been extended to Hassall Green, where a good supply of water was much wanted. Rode Heath, Thurlwood, and Lawton Heath (as noted in the last Annual Report) are still very badly off for good water. Holmes Chapel is in great need of a good water supply. Many of the inhabitants of this village have to fetch water from some distance. There is excellent water in the neighbourhood, and if a good scheme were carried out bringing it to Holmes Chapel, most of the people there would connect and avail themselves of it.

Seven samples of water were sent for analysis during the year, and two certificates were granted under the Public Health (Water) Act, 1878.

Inspector's Report.—The Inspector, Mr. Wm. Hill, reports that during 1896 he has made 2296 visits in various parts of the district. The number of nuisances reported and abated was 140. Seven cases of overcrowding were dealt with. The sewers have been kept in good working order, and the irrigation grounds at Mow Cop, Mount Pleasant, Lawton, and Holmes Chapel have been inspected from time to time and kept in order. The scavenging has, on the whole, been well carried out.

Slaughter-houses.—These have been inspected from time to time, and found in good order.

Common Lodging-houses, of which there are six, have been inspected and found satisfactory.

Canal Boats.—In all 38 have been inspected. No infringement of the Canal Boats Acts has been reported.

DISLEY.

Rural District.

Medical Officer of Health—DR. C. J. BENNET.

Population at Census, 1891—2260.

Estimated Population in middle of 1896—2300.

Area in Acres—2464.

Birth-rate per 1000 living—21.7.

Death-rate per 1000 living—11.7.

Death-rate from seven principal Zymotic Diseases—0.

Deaths under one year to 1000 births—100.

The entire township of Disley has an area of 2591 acres, and of this all but 127 acres are situate in Cheshire and form the new Rural District of Disley.

The number of births registered in 1896 in the district was 50, and the number of deaths registered in 1896 in the district was 27. Five of the deaths were of infants under one year old, and 8 were of persons aged 65 years and upwards. The birth-rate was five below the mean of recent years, and the death-rate was 3.6 below the mean of recent years.

There was no death due to zymotic disease, 1 was due to phthisis, and 1 to heart disease. There were 12 deaths due to bronchitis or pneumonia.

Infectious Disease Notified.—There were 18 cases of infectious disease notified, viz. :—5 scarlatina, 6 diphtheria, 2 typhoid fever, and 5 erysipelas. All cases notified were investigated. All necessary precautions were taken to prevent the

spread of infection, and the precautions were generally successful.

Scarlatina.—The infection was in the first instance brought from an adjoining district by members of a family who worked there, but the disease only spread to a slight extent. A few cases of scarlatina, of a very mild type, remained in the district at the close of the year.

Diphtheria and Typhoid Fever.—The 6 cases of diphtheria and the 2 cases of typhoid fever were all more or less associated with insanitary conditions. The defects in the premises noted were remedied as far as practicable.

Erysipelas.—The cases of this disease were not associated with insanitary environment, but appeared to be due either to cold or injuries.

Sewage Works.—The proposed sewage works for the village of Disley, referred to in the last Annual Report, were commenced during 1896, and will shortly be completed. When this much-needed improvement is effected, it will allow of many defects and nuisances being remedied which hitherto it has not been possible to deal with satisfactorily.

The sewage scheme for Furness Vale is in the hands of the Engineers.

Water-supply needed at Furness Vale.—An efficient water supply is certainly required for Furness Vale, and should be provided. During the summer of 1896 the inhabitants were again put to very serious trouble and discomfort. The usual supplies completely failed for several weeks, and water had to be carried from an adjoining district, a distance (in some instances) of nearly a quarter of a mile. The Medical Officer of Health trusts that this matter will have the early attention of the District Council.

MACCLESFIELD.

Rural District.

Medical Officer of Health—DR. J. L. RUSHTON.

Population at Census, 1891—17329.

Estimated Population in middle of 1896—17797.

Area in Acres—80384.

Birth-rate per 1000 living—22.3.

Death-rate per 1000 living—16.6.

Death-rate from seven principal Zymotic Diseases—0.9.

Deaths under one year to 1000 births—105.

This district has for registration purposes been divided into six sub-districts, as follows:—

- 1.—Alderley, having an area of 13692 acres, and an estimated population of 3045. It includes Birtles,

Capesthorne, Lower Withington, Old Withington, Chelford, Snelson, Nether Alderley, Over Alderley, Great Warford, and part of Chorley.

- 2.—Bollington, having an area of 7814 acres, and an estimated population of 2907. It includes Tytherington, Pott Shrigley, Lyme Handley, part of Hurdsfield, and part of Bollington.
- 3.—Gawsworth, having an area of 17983 acres, and an estimated population of 2755. It includes Gawsorth, Bosley, North Rode, Marton, Siddington, Henbury-with-Pexhall, and Eaton.
- 4.—Prestbury, having an area of 13667 acres, and an estimated population of 5098. It includes Prestbury, Poynton-with-Worth, Woodford, Newton, Adlington, Butley, Mottram St. Andrew, Fallibroome, and Upton.
- 5.—Rainow, having an area of 14274 acres, and an estimated population of 2156. It includes Taxall, Kettleshulme, Rainow, and Macclesfield Forest.
- 6.—Sutton, having an area of 12954 acres, and an estimated population of 1836. It includes Wildboarclough, Wincle, and part of Sutton.

The birth-rates of these six sub-districts were respectively 20.0, 18.5, 22.8, 22.5, 26.9 and 25.6. The death-rates of these six sub-districts were respectively 15.1, 14.4, 17.0, 17.0, 20.4, and 16.8.

The number of births registered in the whole district was 398. The number of deaths registered in the whole district was 234, but to these must be added 63 deaths of persons belonging to the Rural District who died in the Union Workhouse, Infirmary or Asylum in the Macclesfield Urban District. Forty-two of the 297 who died were infants under one year old and 97 were persons 65 years old and upwards. The proportion of infants among those who died is small, and the proportion of old people is large.

Infectious Diseases.—The number of cases of infectious disease notified was 84, viz:—55 scarlatina, 17 diphtheria, 5 typhoid fever; 2 puerperal fever, and 5 erysipelas. The cases were all treated at home. The number of cases of notifiable disease which proved fatal was 6, viz:—2 scarlatina, 2 diphtheria, 1 typhoid fever, and 1 puerperal fever. The 84 cases occurred in 71 houses.

Scarlatina.—There were 14 cases notified in the first quarter, 14 in the second, 25 in the third, and 2 in the fourth. The fatal cases were, one at Eaton (Gawsworth) in June, and one at Bollington Cross in September. In 9 cases sanitary defects were discovered on the premises.

Diphtheria.—There were 6 cases notified in the first quarter, 2 in the second, 5 in the third, and 4 in the fourth. The fatal cases were one at Prestbury in August, and one at

Bosley in October (this was a child brought from Macclesfield Borough). In 6 cases sanitary defects were discovered on the premises.

Typhoid Fever.—The 5 cases notified occurred respectively at Chelford, Kerridge, Upton, Gawsworth, and Henbury. The first case occurred in June; the premises were in fair sanitary condition, and the cause of the disease could not be traced. The case at Kerridge, in September, appeared to be due to sanitary defects in the house where it occurred. The case at Upton, also in September (the only fatal case), was traced to Ramsey. The case at Gawsworth occurred in October, the sanitary environment was good, and no cause for the malady could be assigned. The case at Henbury was traced to Manchester.

Puerperal Fever.—The 2 cases notified occurred in January and April respectively in Kerridge and Adlington. The first proved fatal. The origin of the disease could not be traced in either instance, but there were sanitary defects in the premises where the case arose at Adlington.

Erysipelas.—There was a case notified at Bollington, 1 at Alderley, and 1 at Adlington. There was nothing to account for the disease in the 2 first cases, but in the Adlington case the premises were in a bad sanitary state. They all occurred in the first quarter. There were also two cases at Kerridge in the third quarter, one being associated with sanitary defects.

Whooping-cough.—There were 11 deaths recorded from whooping-cough, all those who died being under five years old. One was in the Alderley sub-district, 3 were in the Bollington sub-district, 4 in the Prestbury sub-district, and 3 in the Sutton sub-district.

Influenza.—One death occurred from this disease in the Township of Rainow.

Deaths from Injuries.—There were 7 deaths coming under this description. Two were due to an accidental fall, 1 was due to the kick of a horse, 1 was an accidental case of drowning in the canal, and 1 was due to lock-jaw, the result of an injury to the hand, caught in machinery. The other 2 deaths were due to suicide, respectively by hanging and drowning.

Isolation Hospital provision.—On receipt of a letter from the County Council on May 12th, with reference to the provision of an Isolation Hospital, under the Isolation Hospitals Act, 1893, it was resolved that the County Council should be requested to provide the necessary joint Hospital accommodation, the cost of which should be apportioned among the several Authorities.

On June 9th, an application was made to the County Council under section 4 (1.) of the Isolation Hospitals Act, 1893, for the establishment as speedily as possible, of an Isolation

Hospital for this and neighbouring Urban and Rural Districts, as recommended in the Supplementary Report of the County Medical Officer of Health, dated December 28th, 1895. A letter, dated July 31st, was received from the County Council acknowledging the receipt of this communication, and inviting the Macclesfield Rural District Council, together with the Disley Rural District Council, the Macclesfield Corporation, and the Urban District Councils of Bollington, and Yeardsley-cum-Whaley, to appoint representatives to confer with a Sub-Committee of the County Council Public Health Committee. Representatives were accordingly chosen, and these attended the conference and reported thereon.

Analysis of Water.—Particulars are given of 14 analyses of water by the County Analyst. Five waters were certified as unfit for domestic use, 3 as requiring to be filtered, and two as very hard. As soon as any water was found to be not of good quality, its use was discontinued and a better supply sought for.

Water-supply.—The District Council have had under consideration the question of an improved supply to certain houses in Bosley, and the owner has since provided a very satisfactory supply.

Early in the year the water-mains of Buglawton Urban District were extended, at a cost of £37 10s., to Eaton Bank (in this District), and 29 houses in that locality have since had a continuous supply of excellent water.

The scheme for supplying water to the village of Prestbury has been completed, and application made to the Local Government Board to sanction a loan of £600. The Surveyor was authorised to impound the spring which it was proposed to utilize for the supply of water to the village of Prestbury, in order that continued observations might be made as to the rate of flow.

Sewerage Schemes.—Plans and estimates of the scheme for dealing with the sewage of Poynton were approved, and application was made to the Local Government Board to sanction a loan of £5,800 for this purpose. A local inquiry was held by an Inspector, and it was subsequently intimated that the Board required that a greater extent of land should be obtained for disposal purposes than is available in the district, without jumping. An effort is being made to obtain a plot of land just outside the district.

A scheme has been submitted by the surveyor for the disposal of the sewage of Bollington Cross. The matter was referred to the Health Committee.

The Macclesfield Town Council have been approached as to whether they would be willing to receive into their main sewers the sewage of Prestbury and Tytherington. The proposal was looked on with favour, but nothing has been settled at present.

The Surveyor and Inspector (Mr. James Thorpe) furnishes information as to matters coming under his supervision.

Nuisance Abatement.—Forty formal notices were served for the abatement of nuisances and for the provision of efficient water-supplies, but the abatement of a large number of nuisances was obtained without formal notice. There were 165 inlets to drains trapped, 15 waste-pipes disconnected, 8 defective water-closets replaced by more efficient ones, and 61 privies rebuilt or re-arranged. In 71 houses entirely new drains were laid to replace inefficient ones. Twenty-two houses, unhealthy through damp, were improved by removing soil from walls, draining sites, providing rain gutters, spouts, &c. Twelve sleeping rooms were provided with means of efficient ventilation. Many other nuisances, arising from obstructed drains, inefficient drainage disposal, the keeping of swine and other animals, the accumulation of refuse, &c., were abated.

House unfit for habitation.—One house, reported as unfit for human habitation, has been re-built as the result of correspondence with the owner.

New Houses.—Plans for 20 new dwelling-houses and other buildings were approved. In the course of erection the buildings were frequently inspected to see that the bye-laws were adhered to. Sixty-four houses were provided with new or improved water supplies.

Effluent outfalls from the Sewage Disposal Works at Alderley Edge and Fulshaw, which discharge into streams in the Rural District, have been visited at intervals during the year. The effluents on each occasion appeared to be satisfactory.

Dairies, Cow-sheds, &c.—Nineteen persons were registered under the Dairies, Cow-sheds, and Milk-shops Order during the year. There are at present 351 persons registered. All the premises were visited and were generally found well kept.

Slaughter-houses were visited regularly and were generally found clean and in good order.

Canal Boats.—Under the Canal Boats Acts, 44 boats were inspected during the year. The boats were registered for 135 adults, and carried 69 men, 23 women and 25 children. Sixteen of the children were of school-age, but in very few instances was any efficient tuition being obtained. The few irregularities noted (with respect to registration and lettering) were amended without any legal proceedings having to be taken. No case of infectious disease was met with.

MALPAS.

Rural District.

Medical Officer of Health—DR. W. N. THURSFIELD.

Population at Census, 1891—4624.

Estimated Population in middle of 1896—4640.

Area in Acres—21408.

Birth-rate per 1000 living—27·3.

Death-rate per 1000 living—13·5.

Death-rate from seven principal Zymotic Diseases—0·4.

Deaths under one year to 1000 births—70.

The Rural District of Malpas includes the whole of the registration sub-district of Malpas, and three townships in the registration sub-district of Whitchurch.

Malpas registration sub-district has an area of 16,468 acres and a population of 3,528. It includes Bickley, Hampton, Larkton, Duckington, Edge, Overton, Malpas, Chorlton, Cuddington, Oldcastle, Newton-by-Malpas, Stockton, Wyclough, Wigland, Agden, Chidlow, Bradley, Macefen, and Tushingham-with-Grindley.

The portion of Whitchurch registration sub-district in Cheshire has an area of 4,692 acres and a population of 792. It includes Wirswall, Marbury-with-Quoisley, and Norbury.

To this Rural District was added, in 1896, the whole of the Parish of Threapwood, the Census particulars of which are as follows:—

Threapwood :

Part in Cheshire	...	152 acres, 206 persons.
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Part in Flintshire	...	96 „ 100 „
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The Cheshire and Flintshire portions of Threapwood were previously under the administration of the Wrexham Rural District Council, but an Order has been made transferring the Flintshire portion of the Parish of Threapwood from the Administrative County of Flint to the Administrative County of Chester, and including the whole of such Parish in the Whitchurch Poor Law Union and Malpas Rural District.

In 1896 the number of births registered was 127, and the number of deaths registered was 63. The birth-rate is 1·1 above the mean birth-rate in 1892-95. The death rate is 0·4 above the mean death-rate in 1892-95. The proportion of deaths under 1 year is small, as it has been for many years. The proportion of deaths of old people is very large.

There were only 2 deaths from zymotic diseases, viz. : 1 typhoid fever and 1 diarrhoea.

The number of cases of infectious disease which came to the knowledge of the Medical Officer of Health was 12, viz. : 3 scarlatina, 5 diphtheria, 2 typhoid fever, and 2 erysipelas. The number of cases given exceeds the number notified under

the Infectious Disease (Notification) Act. As a rule, in outbreaks of scarlatina and diphtheria, and occasionally in outbreaks of typhoid fever, careful investigation will reveal other cases of the disease so mild and ill-defined as not to have attracted notice or received medical attendance. These are most important, as it is generally through patients mildly affected not being kept from school that school-agency so frequently disseminates disease. Special care is taken to obviate risk of infection by school attendance, clothing taken in to wash, milk-selling, &c. No hospital is provided, but the necessity of isolation as far as practicable is enjoined, and printed directions are given showing those in charge of the sick how to prevent the spread of infection. On the patient's recovery the need is pointed out of having the infected clothing &c., thoroughly cleansed, and the infected rooms fumigated with sulphur, and lime-washed or re-papered.

The incidence of zymotic disease upon the district, during 1896, has been very light, and it is very satisfactory to record that whereas outbreaks of three of the principal infectious diseases have occurred, the measures taken have been completely successful in preventing the spread of infection beyond the persons first attacked.

Scarlatina.—The 3 cases were practically survivals of the outbreaks reported in 1895, or revivals of infection in houses previously affected.

Diphtheria.—The 5 cases of this disease occurred in 4 houses. All the cases were carefully investigated. In two cases it appeared that children were infected at a school outside the district. In another case there was evidence of a revival of old germs in a house where a case had been investigated some years before.

Typhoid Fever.—The two cases were not in any way connected. Both were carefully investigated, but the ultimate source of infection remained obscure. Insanitary conditions were found to exist on the premises in each case, and prompt action was taken to remedy these.

Measles was epidemic in certain parts of the district in the early part of the year, and led to the closing of Marbury and Tushingham Schools in March.

The suggested Hospital provision.—With reference to this matter, which has been prominently brought forward by the County Council, the Medical Officer of Health has nothing to add to the advice he gave in his last Report.

Water-supply.—The supply for Malpas is from the Liverpool mains, but it is intermittent, being turned off at night.

At Chorlton, the public well near the Brook, reported as needing protection, being liable to direct pollution from the

public highway, has had attention and been protected. The public well at Norbury, reported as liable to contamination, has been improved. The upper part has been lined with an iron cylinder and a cover provided, and the well has been fenced round. At Gorton's Bank is a public well (supplying 4 or 5 houses sometimes more) referred to in the Report for 1895, as open to cattle and surface contamination, which has not yet had attention. It should be covered over and protected with a small hand-pump. This well is said to be on private ground, but it has been open to anyone for over thirty years.

The new public well at Cuddington, provided by arrangement among property owners and villagers, yields a plentiful supply.

The difficulties in procuring a good water-supply for Oathill Cottages (12 modern cottages) have been overcome. These cottages are now connected with the Liverpool mains.

The water-supply at Marbury Schools is not satisfactory. The children at times drink from a pump in the school yard, the water of which is said to be occasionally muddy. The situation of the well is objectionable, owing to its proximity to school-closets and various drains. The Schoolmaster does not use the well but obtains water from a neighbour on sufferance. Not far from the village a spring affords an excellent and copious supply to one or two private houses to which it is laid on, and this water is piped to a tap at the end of the village and supplies three houses contiguous. The Medical Officer of Health suggests that the owner of this supply should be approached with a view to having the pipe carried on to the School, and to conveniently placed pipes in the village. There are some 20 scattered houses in the village, supplied from various pump-wells, liable to pollution as shallow-wells sunk near occupied dwellings must be.

Malpas Sewerage.—The tanks at the 3 outfalls of the main sewers have been considerably improved in construction and arrangement during the year, and the disposal of sewage has been brought more into line with modern requirements. As now arranged the sewage is as a rule dealt with by broad irrigation on cultivated land. When the sewage is not required on the land it is treated with alumino-ferric, the sludge allowed to subside in the tanks, and the clarified effluent discharged. A competent man is engaged to supervise the treatment.

Abatement of Nuisances.—The attention given by the Inspector to complaints made, and to a systematic house-to-house survey, is indicated in the following return. The number of houses inspected was 85; the number of notices served, formal and informal, was 54; and the approximate number of these complied with was 46. The nuisances were owing to defective house-drains, defective closets, damp or dirty houses,

houses without proper water-supply, accumulations of refuse, &c.

Dairies, Cow-sheds and Milk-shops.—These are registered, but no special regulations have been made. The premises are visited by the Inspector, and any offences or irregularities noted dealt with by him.

NANTWICH.

Rural District.

Medical Officer of Health { to June, 1896, the COUNTY MEDICAL OFFICER.
after June, 1896, DR. R. T TURNER.

Population at Census, 1891—22903.

Estimated Population in middle of 1896—23382.

Area in Acres—98458.

Birth-rate per 1000 living—27·3.

Death-rate per 1000 living—14·3.

Death-rate from seven principal Zymotic Diseases—1·5.

Deaths under one year to 1000 births—122.

Four Townships (Tiverton, Tilstone Fearnall, Beeston, and Burwardsley) were taken from the Nantwich Rural Sanitary District and added to the Tarvin Rural Sanitary District on July 1st, 1892. Parts of three Townships (Coppenhall Church Shavington-cum-Gresty, and Wistaston) were taken from the Nantwich Rural Sanitary District and added to the Borough of Crewe, by Local Government Order (duly confirmed) which came into operation on November 9th, 1892. The area and population of the Nantwich Rural District have therefore since the Census been reduced as follows:—

	Area in Acres.	Population at Census.
Nantwich R. S. D. in 1891 ...	104932	28326
Less portion added to Tarvin R. S. D.	5617	1401
Less portion added to Borough of Crewe	857	4022
 Nantwich R. S. D.	98458	22903

In 1896 the number of births registered in the district was 639, and the number of deaths registered in the district (including 10 which took place in the Workhouse in the Nantwich Urban District, and excluding 10 which took place at the Men's Hospital among persons not belonging to the Rural District) was 336.

The whole District, for registration purposes, has been divided into 4 sub-districts. These are as follows:—

1. Crewe, having an area of 31145 acres, and an estimated population of 11142. It includes Warmingham, Haslington, Barthomley, Crewe, (taking in

Crewe Green), Willaston, Weston, Basford, Rope, Stapeley, Walgherton, Wybunbury, Hough, Chorlton, Lea, Blakenhall, Checkley-cum-Wrinehill, Bridgemere, Hunsterson, Doddington, Hatherton, Batherston, and parts of Coppenhall Church, Shavington-cum-Gresty, and Wistaston.

2. Nantwich, having an area of 21300 acres, and an estimated population of 3538. It includes Coole Pilate, Austerson, Baddington, Edleston, Burland, Faddiley, Brindley, Acton, Henhull, Harleston, Poole, Stoke, Cholmondestone, Aston-juxta-Monrum, Worleston, Alvaston, Woolstanwood, Leighton, and Minshull Vernon.
3. Bunbury, having an area of 15845 acres, and an estimated population of 3105. It includes Minshull Church, Wettenhall, Bunbury, Alpraham, Calveley, Wardle, Haughton, Spurstow, Ridley, and Peckforton.
4. Wrenbury, having an area of 30168 acres and an estimated population of 5597. It includes Chorley, Wrenbury-cum-Frith, Woodcott, Broomhall, Didcott-cum-Wilkesley, Sound, Audlem, Burton, Hankelow, Baddiley, Newhall, Cholmondeley, Egerton, Bickerton, and Bulkeley.

The birth-rates of these four sub-districts were respectively 28.2, 22.0, 24.4, and 30.3. The death-rates of these four sub-districts were respectively 13.1, 18.6, 16.4 and 13.0.

The birth-rate of the whole district was 1.0 below the mean birth-rate of the four years 1892-95. The death-rate of the whole district was 0.9 below the mean death-rate of the same four years.

The number of births registered in the first quarter was 148, in the second 176, in the third 144, and in the fourth 171. The number of deaths registered in the first quarter was 86, in the second 66, in the third 81, and in the fourth 103. The death-rate was therefore remarkably low (11.29) during the second quarter.

Infant Mortality.—Seventy-eight of the deaths recorded were of infants under one year old, viz. : 21 bronchitis or pneumonia, 14 debility or marasmus, 11 convulsions, 10 premature birth, 7 whooping-cough, 4 tuberculous disease, 4 inflammation of stomach or bowels, 3 diarrhoea, 1 measles, 1 thrush, 1 congestion of the brain, and 1 jaundice. Twenty-four were registered in the first quarter, 12 in the second quarter, 16 in the third quarter, and 26 in the fourth quarter. Fifty-six out of the 78 infants were under six months old at the time of death.

Deaths from Zymotic Diseases.—The number of deaths ascribed to the principal zymotic diseases was 37, which is equal to a death-rate of 1.58 per 1000 living. The 37 deaths were registered as follows : 6 scarlatina, 14 diphtheria or membranous croup, 1 typhoid fever, 4 measles, 8 whooping-cough, and 4 diarrhoea.

Cases of Zymotic Diseases reported.—The extent of the prevalence of zymotic diseases is not easy to estimate, as in this district cases of infectious disease are not required to be notified.* However, 132 cases of infectious disease were voluntarily reported or came to the knowledge of the Authority during the year. Of these 109 were scarlatina, 9 were diphtheria, 8 were membranous croup, 4 were typhoid fever, and 2 were puerperal fever.

Scarlatina.—The township most seriously affected with this disease was Haslington, where 2 cases proved fatal in March and 2 in September. In August there was a death at Willaston, contiguous to the town of Nantwich, where scarlatina was then epidemic. The only other death from scarlatina was in September, at Bulkeley, where three deaths occurred.

The record of the prevalence of the disease in the district, so far as it is known, is as follows:—Early in January, 3 cases were reported at Worleston, and investigation showed that the infection was derived from Crewe. During this month also single cases were reported from Stapeley, Audlem, and Burland. At the beginning of February six cases came to the knowledge of the Authority at Haslington, these probably in the first place having been infected from Crewe. During March there was a continuance of the disease at Haslington, five cases being reported. During April there was a cessation of the disease at Haslington, no cases being reported. One case was reported from Stoke. In May there was another sharp outbreak at Haslington, sixteen cases being reported. One case also was reported from Wrenbury. In June there was another decline in the Haslington outbreak, one case only being heard of. A case occurred during this month in a partially-pulled-down house at Alvaston. This case was very difficult to deal with, as there was no Isolation Hospital to which it could be sent and no persons could be found who would receive it. The difficulty was got over by stopping the pulling-down of the house and making habitable that portion which remained. The case did well. In July there was one case at Haughton, in a child who brought with him the infection from Liverpool. There were also during the month ten cases in that part of Willaston which adjoins Nantwich, these cases clearly being infected from Nantwich, where the disease was epidemic. In August four cases were reported from the same part of Willaston, one from Alpraham, three from Wrenbury, and one from Haslington. During September the cases at Haslington again considerably increased,

* It is satisfactory to know that this initial difficulty in dealing with outbreaks of infectious disease is about to be removed, and that at the time of writing this Report the Authority have actually passed a resolution to adopt the Infectious Disease (Notification) Act, 1889. The District Council will henceforth have regular notice of dangerous infectious disease, the obligation to notify each case resting on the householder and Medical Practitioner in attendance.

nineteen being discovered. There were three cases at Bulkeley and two at Willaston. During October there was a case at Haslington, two at Wrenbury, one at Newhall, and three at Willaston. In November there were three new cases at Willaston, five at Broomhall, two at Coole Pilate, one at Sound, and three at Baddington. The cases at Broomhall, Coole Pilate, Sound, and Baddington were all among children attending the Broomhall School, and as they lived far apart, and apparently had no other means of coming in contact with each other, it was concluded that they were cases of "School infection," and on the advice of the Medical Officer of Health, the School was closed for a month and disinfected, with the result that the outbreak at once ceased. During December one new case was reported from Willaston.

Diphtheria and Croup.—The information under this heading, came almost entirely from the returns of the Registrar of Deaths. The six deaths certified as due to diphtheria and the eight certified as due to croup may be considered together. In January a death took place in Haslington which was registered as diphtheria, In July were two deaths (one at Cholmondeley and one at Wybunbury) ascribed to croup, and in October was a death at Alpraham from croup. All these four patients were 2 years old at the time of death (that is, they died before reaching school age), and the disease does not appear to have spread, or only slightly. All the other fatal cases were at Bunbury or Spurstow, which are close together. They are as follows :—

Female (aged 5 years),	who died at Bunbury on January	23rd.
Female (,, 7,,),	Spurstow,, October	16th.
Female (,, 6,,),	Spurstow,, „	20th.
Male (,, 3,,),	Bunbury,, „	20th.
Female (,, 5,,),	Spurstow,, „	26th.
Male (,, 9,,),	Bunbury,, November	21st.
Male (,, 9,,),	Bunbury,, „	24th.
Female (,, 14 months),	Bunbury,, December	2nd.
Female (,, 6 years),	Spurstow,, „	12th.
Female (,, 9,,),	Bunbury,, „	12th.

Though 5 of the cases were registered as diphtheria and 5 as croup, there is reason to believe that all (and other more or less serious cases associated with them) were diphtheritic in character. There is nothing to be said about the first case, except that it was a domestic servant's child, living with very poor people, whose environment was insanitary. The initial case in the outbreak at Spurstow appears to have been an agricultural labourer's infant, who took ill early in October, and died on the 8th. The malady was not recognised as serious, and no medical advice was sought, so that when death took place it formed the subject of an official inquiry, and the Coroner's jury decided that death was due to "natural causes." Then the father of this infant sickened. He died on the 15th, the death

being certified "quinsy." The third death in this house was that of the little girl (age 5), who died on the 26th. Meanwhile the disease had appeared at another cottage in Spurstow, and two little girls, aged 7 and 6, died respectively on the 16th and 20th. Then a lad at Haughton (which adjoins Spurstow) took the disease, but he recovered. The 3 houses in which these cases occurred were all low, thatched cottages, ill-ventilated, with no proper drainage, and a water-supply from dip-wells in fields liable to pollution. The last of the cases in Spurstow, known to the Authority, it will be seen was fatal on December 12th. The 5 fatal cases in Bunbury, were all in different houses; and the earliest was in a house where the sanitary arrangements were satisfactory, and the water-supply was from the Vyrnwy mains.

A very much more complete record of this outbreak could have been furnished if cases of diphtheria and croup had been notifiable. As it was, but few of the cases were heard of till death had taken place, and mild cases which probably formed the connecting link between one fatal case and another were never heard of at all. An outbreak, which resulted in 10 or 12 deaths, was certainly not limited to about that number of cases.

Typhoid Fever.—The only case of this disease reported in the first three quarters of the year occurred at Burland in January. In October, 2 cases (one of which proved fatal) appeared practically at the same time at Blackenhall. The patient who died was a woman 64 years old. The water-supply was from a shallow well adjoining a pit in the village. A sample was sent for analysis and found to be unsatisfactory; but as the well was the only source of supply available for a large portion of the village, it was hardly possible to close it. The well was accordingly fenced round, the level of the pond adjoining was considerably lowered by opening up its overflow, and the inhabitants of the village were warned that they would run great risk if they drank the water without previously boiling it. This supply and the practicability of improving or replacing it is engaging the attention of the Authority. Another case of typhoid fever was reported in October. It was in a small cottage at Checkley. The cottage was much overcrowded and subject to serious nuisance from the drainage of a large farmhouse which was discharged almost immediately behind the cottage. A statutory notice to abate nuisances was served upon the owners of the property, and the cottage is now uninhabited.

Puerperal Fever.—The two deaths which have been entered under this heading were not in any way connected. The first occurred at Audlem in July, and the second at Newhall in September. The deceased were both young domestic servants.

Measles.—This disease was very prevalent during August and September among children attending the Acton School. On

this account the school was closed. A similar outbreak at Bunbury necessitated the closure of all the Bunbury schools on October 21st, for a fortnight. Of the 4 fatal cases of measles, 1 occurred at Willaston in May, 2 at Burland in September, and 1 at Hurleston in December. The 3 earlier cases were complicated with broncho-pneumonia, and the fourth case was complicated with whooping-cough. One child was 13 years old at death, the others were under 5 years of age.

Whooping-cough was very prevalent in September among the children attending the Bridgemere School, and on this account the school was closed for a month. Whooping-cough was also prevalent at and near Wrenbury, late in the fourth quarter of the year, and on this account the Wrenbury School was closed on December 3rd until after the Christmas holidays. In all, whooping-cough was the registered cause of 8 deaths—3 being at Wrenbury, 1 at Hankelow, 1 at Audlem, 1 at Newhall, 1 at Stapeley, and 1 at Hunsterson. One death was in March, 2 were in July, 3 were in October, 1 was in November, and 1 in December. All those who died from whooping-cough were infants. the oldest being 13 months old.

Diarrhoea.—Three of the 4 cases of diarrhoea recorded were infants under 5 months old; one was over 5 years old at death. Two of the cases occurred in summer.

Influenza was the registered cause of only 1 death. It took place at Warmingham in December, the subject being an agricultural labourer 51 years old.

Lung Diseases.—Phthisis pulmonalis was the registered cause of 23 deaths belonging to the district. This is equal to a death rate of 0.98 per 1000 living. Bronchitis and pneumonia were the registered causes of 67 deaths belonging to the district. This is equal to a death rate of 2.8. These are fair average death-rates—not high.

Heart Disease was the cause of 53 deaths belonging to the district. This is equal to a death-rate of 2.26, which is high.

Deaths from Injuries.—Of the 15 deaths ascribed to injuries, 12 were accidentally caused, that is to say—5 persons were killed by falls, 2 were accidentally killed by locomotive engines, 2 were accidentally drowned, 1 was accidentally scalded, 1 died from a shock, and 1 from lockjaw brought on by accidentally pricking his foot. In the remaining 3 cases—the question, Accident or Suicide? was not decided—1 person was found drowned, 1 was found dead on the railway, and 1 died from an opiate, but whether administered medicinally or otherwise the evidence was insufficient to prove. Nine of those who died from injuries were adult men, 1 was a lad, 2 were male infants, and 3 were adult women.

Isolation Hospital provision.—There is at present no Isolation Hospital that can be used for cases occurring in this district. The question of making provision was the subject of inquiry by a Committee of the Council in the latter months of the year. This Committee reported in favour of providing a Hospital to accommodate 12 patients. Their report has, so far, not been acted upon by the Council. It is a matter of regret to the Medical Officer of Health that no provision exists, as he is convinced that the best way to prevent epidemics is to isolate the early cases. He is of opinion that the question is one that might well be again considered.

Disinfection.—The arrangements for the disinfection of clothing, and premises after infectious sickness cannot be considered satisfactory. Disinfection is left to the householder to perform, and with the present staff it is not always possible to see that it is done thoroughly. As a consequence, disinfection of rooms is often performed rather perfunctorily, and it is probable that bedding and unwashable articles often entirely escape adequate disinfection, since it is now recognised that the process can only safely be carried out by means of a special apparatus for treating the articles with steam.

Drainage.—Nothing further has been done with respect to any general system of sewerage in the larger villages of the District. It would be wise for the Council to consider some method of more effectually dealing with the sewage of some of these villages, more especially of Bunbury, Willaston, Haslington, Shavington, and Audlem.

Report of the Surveyor and Inspector.—Much information is furnished in Mr. J. A. Davenport's Report, as to water-supply and matters coming under his supervision. From this it appears that a large amount of good work has been done during the year.

Water-supply.—One hundred and twenty-eight houses were newly supplied with water from the public mains during 1896, the same number as in 1895. Eight miles of mains were laid during the same period. Up to the present the Authority have supplied 3232 houses, and 119 miles of water-mains have been laid.

There have been 86 inspections of houses under the Public Health (Water) Act, 1878. Fifteen samples of water have been sent for analysis, 4 of which proved good and 11 bad. Several new pumps have been fixed at private residences, and private water-supplies have been improved.

Although so much has been done, much remains to be done. In particular, the supply of Audlem and Coole 'Pilate, with the districts surrounding them, especially needs prompt attention.

Nuisance Abatement.—Statutory notices have been served in respect of 174 premises. New drainage has been laid down in 100 houses. New privies and covered ashpits have been erected or old ones altered at 72 houses. Other permanent sanitary improvements have been made at 22 houses. Various nuisances, not included in the above, have been abated at 21 houses. In 67 cases the nuisances have not as yet been abated or are in course of being abated or are waiting re-inspection. A number of nuisances have been abated by agreement without service of notices. In 4 cases legal proceedings had to be taken to enforce the abatement of nuisances, and the result in every case was satisfactory.

Insanitary Houses.—Seven dwelling-houses have been closed as unfit for human habitation.

Scavenging.—The District Council have scavenging contracts in respect of Haslington, Willaston, Shavington and Audlem, and during the year there were 2603 inspections of premises in connection with these contracts. The work has been generally carried out satisfactorily.

New Buildings.—Plans for 80 new buildings have been passed during the year, making a total of 1788 plans for new buildings passed in the District since urban powers in respect of new buildings were conferred on the Authority. Each new building of course necessitates several inspections.

There are no common lodging-houses in the District.

Dairies and Cow-sheds have been inspected as opportunity offered.

Slaughter-houses have been inspected from time to time. The licensed houses are generally in good condition. No new slaughter-house has been licensed during the year.

Canal Boats.—Beside occasional inspections of boats of which no record has been kept, 41 boats have been properly inspected and full details of each entered in the journal. Twenty-one boats entirely conformed to the Acts and Regulations leaving 20 in which infringements were noticed. In 7 instances there were no certificates on board the boats, and in another instance the certificate did not identify the owner with the boat. In the case of two boats the marking regulations were infringed. One boat needed repairs, and in 12 boats the re-painting of cabins was required. On board 10 boats there was no proper and sufficient water vessel. All the infringements of the Acts, &c., noted have been brought to the attention of the owners of the boats. No legal proceedings in connection with the boats have been taken during the year.

Twenty-one of the boats were homes for those who travelled with them, the captains of the remaining 20 boats had homes apart. On 21 boats there were no women and children; on the other boats were 21 women and 26 children, 18 of whom were under five years of age.

NORTHWICH.

Rural District.

Medical Officer of Health—DR. T. W. H. GARSTANG.

Population at Census, 1891—20923.

Estimated Population in middle of 1896—22501.

Area in Acres—54301.

Birth-rate per 1000 living—37·0.

Death-rate per 1000 living—14·9.

Death-rate from seven principal Zymotic Diseases—1·8.

Deaths under one year to 1000 births—125.

The Medical Officer of Health has made a very careful estimate of the local population. Not satisfied with the estimate which he had been using during the year in his monthly and quarterly Reports, he issued a circular in December, 1896, to the Overseers (or Assistant Overseers) in the townships belonging to the District, asking them to help him in making a new estimate. Out of 37 townships, there were only three from which he received no reply, and in these cases he obtained the information he required from the Registrars. The net result of the particulars furnished to him justified his reducing his previous estimate of 24300 to 22501—a reduction equal to 7·4 per cent. The sub-districts were variously affected. The estimate for Weaverham sub-district was reduced 4·8 per cent. ; that for Northwich sub-district was reduced 12·0 per cent. ; that for Over sub-district was reduced 0·4 per cent., and that for Middlewich was reduced 8·0 per cent.

In 1896, the number of births registered in the district was 834, and the number of deaths registered in the district (including 4 which took place in the Victoria Hospital, and 2 in the Union Workhouse, both in the Northwich Urban District) was 348.

The whole district, for registration purposes, has been divided into four sub-districts. These are as follows:—

1. Weaverham, having an area of 18,000 acres, and an estimated population of 8561. It includes Delamere, Eddisbury, Oakmere, Cuddington, Weaverham, Crotton, Acton, Little Leigh, Barnton, and part of Hartford.
2. Northwich, having an area of 10,891 acres, and an estimated population of 8092. It includes Cogshall, Comberbach, Marbury, Marston, Wincham, Lostock Gralam, Peover Nether, Allostock, Anderton, part of Leftwich, and part of Winnington.
3. Over, having an area of 12,472 acres, and an estimated population of 3089. It includes Marton, Darnhall, Little Budworth, Wimboldsley, Clive, Moulton, and Eaton.

4. Middlewich, having an area of 12,938 acres, and an estimated population of 2759. It includes Davenham, Rudheath, Whatecroft, Bostock, Stanthorne, Sproston, Byley-cum-Yatehouse, Lach Dennis, part of Newton, and part of Kinderton-with Hulme.

The birth-rates of these four sub districts were respectively 34.9, 44.8, 28.8, and 30.0. The death-rates of these four sub-districts were respectively 16.2, 15.2, 15.2, and 14.1.

The birth-rate of the whole district is 2.8 above the mean birth-rate of the four years 1892-95. The death-rate of the whole district was 2.1 below the mean death-rate of the four years 1892-95.

The number of births registered in the first quarter was 209, in the second 221, in the third 220, and in the fourth 184. The number of deaths registered in the first quarter was 110, in the second 79, in the third 68, and in the fourth 91. The death-rate was therefore light in the first quarter only, when a low temperature prevailed.

Infant Mortality.—One hundred and five of the deaths recorded were of infants under one year old. The causes of these deaths and the sub-districts in which they occurred, are as follows:—

SUB-DISTRICTS.	Prematurity.	Teething and Convulsions	Debility and Marasmus	Zymotic Diseases.	Bronchitis and Pneumonia	Various	TOTAL.
Weaverham...	7	8	12	7	8	2	44
Northwich ...	6	4	11	4	10	3	38
Over	3	0	4	0	2	6	15
Middlewich ...	2	3	0	0	2	1	8

The number of deaths of infants to each 1000 births was therefore 147 in Weaverham sub-district, 104 in Northwich sub-district, 168 in Over sub-district, 96 in Middlewich sub-district, and 125 in the whole Rural District. In the four years 1892-95 the number of deaths of infants to each 1000 births was 144.

Of the 105 deaths, 34 were registered in the first quarter, 21 in the second, 21 in the third, and 29 in the fourth.

Infectious Diseases.—The number of cases of infectious disease notified was 270, viz.:—218 scarlatina, 15 diphtheria and croup, 20 typhoid fever, 3 puerperal fever, and 14 erysipelas. Seven of the scarlatina cases were removed to the Isolation Hospital at Marbury. Of the notified cases 19 proved fatal, viz.:—10 scarlatina, 4 diphtheria (including croup), 4 typhoid fever, and 1 puerperal fever.

Scarlatina.—There were 54 cases notified in the Weaverham sub-district, 121 in the Northwich sub-district, 9 in the

Over sub-district, and 34 in the Middlewich sub-district. The cases in the Weaverham sub-district divide into two groups—the Barnton cases and those in the western townships. At Barnton there were 2 cases in March, 2 in April, 1 in May, and 2 in June, believed to be connected with the Winnington outbreak. There were also 9 cases in August, 3 in September, 1 in November, and 9 in December, which may have been a purely local epidemic, or may have depended on inter-communication with Northwich town. There was also a case at Little Leigh (near Barnton) in August. The outbreak in the western townships (believed to be connected with some prevalence of the disease in the adjoining part of Tarvin Rural District) was early in the year. There were 5 cases at Cuddington in January, and 1 in March; at Oakmere there was a case in January, 2 cases in February, and 2 in March; at Eddisbury there was a case in January, 3 cases in February, and 1 in March; at Delamere were 2 cases in January, 3 in February, and 3 in April; and at Hartford were 3 cases in March, and 3 in April. The only other case in these townships was one at Delamere, in November, and this occurred in one of the houses previously infected. Of the 54 cases 3 proved fatal, viz. :—2 at Barnton, and 1 at Eddisbury.

In the Northwich sub-district about two thirds of the notified cases were at Winnington. The other cases were scattered over 8 townships. At Wincham there was a case in January, 2 in June, and 1 in July (1 of the 4 cases was fatal), at Comberbach there was a case in March, 2 in November, and 1 in December; at Allostock there was a case in April, and at Nether Peover 3 cases (one house) in April; at Leftwich there was a case in April, 2 in November, and 1 in December; at Marston there was a case in April, 1 in June, 1 in August and 1 in September. At Lostock Gralam there were 4 cases in January, 5 in February, 1 in July, 4 in November, and 4 in December (the last 8 in one house). Anderton had a case in May, 1 in June, and 2 in July, which might be connected with the preceding, or with the Winnington epidemic. Scarlatina appeared at Winnington in December, 1895, when there were 7 cases. The number of cases in each of the twelve months of 1896, was respectively—5, 2, 12, 12, 9, 15, 6, 6, 6, 0, 5, 1. The area affected comprises several streets of new and well-built cottages, tenanted by the work-people of Messrs. Brunner, Mond & Co., built and owned by the firm. There is a good water-supply, all the houses are drained, the pail-closets are carefully scavenged, and the firm employ an Inspector who keeps a register of infectious cases, and disinfects infected premises. How then account for the spread of the disease? One cause, no doubt, was the presence of a large number of susceptible children, and another was the careless intercourse between families irrespective of the existence of infection. A third cause was the intercourse among children at school. It

has been instructive to observe the effect of school-closure. It was not until March that the disease caused any uneasiness. The school was closed on March 31, and for the first half of April the disease still increased. After that there was so pronounced an abatement that the School was re-opened on May 11th. Then the cases increased, and this continued till July 4th., when the School was closed and not opened till after the summer holidays on August 18th. There followed a few scattered cases (many in houses previously infected), but from September 28th, to November 7th., not a single case was reported. Five cases in November and one on December 1st, complete the record. Considering that the local population is estimated at 1900, and that upwards of 800 children (some from other townships) attend the school, the number attacked is not extraordinary.

The age incidence is interesting. The earlier cases were mostly children between 5 and 10 years old; the younger children were affected later. There were 13 cases of infants under 3 years old, who could not be at school. There were 22 between 3 and 5 years old, children who might or might not be attending school. There were 31 between 5 and 10 years, 7 between 10 and 15 years, 3 between 15 and 20 years, and 3 over 20 years. There were 4 deaths at Winnington, viz:—1 in January, 1 in May, and 2 in June. The ages of those who died were respectively 9 years, 4 years, 3 years and 3 years.

In the Over sub-district there were 4 cases at Darnhall, in February, June, July, and November respectively; a case at Marton in July and 3 in September; and a case at Moulton in December. All these cases recovered. They were probably associated with the epidemic of scarlatina in Winsford Urban District.

In the Middlewich sub-district 13 of the cases, and the only fatal one, were at Rudheath. At Bostock there were 3 cases (one house) in February, the infection was from Nottingham. At Byley there was one case in May, and at Kinderton there were two cases (one house) in March, all infected from Middlewich. At Whatcroft there were 7 cases. At Davenham there were eight cases (one in January, four in November and three in December). At Rudheath there were two cases (one house) in January, one case in April (a convalescent schoolboy removed from the town of Northwich), one in September, five (three in one house) in November, and four (three in one house) in December. The latter cases in both Davenham and Rudheath are connected with an outbreak in Northwich Urban District.

Diphtheria and Croup, regarding the two terms as indicating diphtheria, appeared 15 times during the year. In the Over sub-district there was but one case, viz: at Moulton in December. In Northwich sub-district there was a case at Comberbach in September, and there were two cases in Leftwich,

respectively in May and June. The remaining 11 cases were in Weaverham sub-district. There was one case at Weaverham in May, three at Delamere (one fatal), respectively in July, November and December, and seven at Barnton (two fatal), two being in July, four in August, and one in September. A visit of inspection and enquiry on August 21st, enabled the Medical Officer of Health to report that Barnton was "full of sore throats" about this period, so that probably there were many slight cases which were not reported. It was found impossible to associate any with the cases to foul sewers, bad water-supply, or school attendance. The milk-supply was from several sources, and all were examined without result. It seems, therefore, as if the disease may have been due to some of the obscure causes (such as sub-soil temperature, and height of sub-soil water) which are not fully understood. The weather had been fine and warm during July and August, but towards the latter part of August a long period of steady rain set in, and the four cases in August occurred immediately before the rain came on.

Typhoid Fever.—There were 12 cases notified in Weaverham sub-district, six in Northwich sub-district and two in Middlewich sub-district. Of the cases in Northwich sub-district, one was at Marston and one at Lostock Gralam in August; and four were at Winnington, one being in September and three in October. The three latter are believed to be connected with the water-supply from new wells for new houses, and the District Council is advised, if practicable, to extend their mains from Greenbank. The cases in Middlewich sub-district were both fatal; one occurred at Davenham in February, the infection being taken at Latchford, and the other at Rudheath in April, the patient being in a low condition after a severe operation. Of the cases in Weaverham sub-district, two occurred at Barnton, respectively in March and July (the former a canal boatman), one case occurred at Cuddington in March, in a large house, where the origin was difficult to account for, one case occurred at Delamere in May, one at Crowton in September (imported from Altrincham), and one case at Oakmere in July (imported from Salford). These are all scattered and in no way connected, it is otherwise with the six remaining cases which were all within a small radius at Acton. The first was notified on August 5th, and proved fatal on September 3rd (male 34 years). Two children in the same row of cottages were notified as having the disease on September 22nd, and on October 2nd the widow of the man who died on September 3rd was notified. On November 14th a case was notified (which proved fatal on the following day) at a farm close by. The well-water was analysed and found to be polluted. Finally, on December 18th, the father of the two children attacked in September was notified as having the disease in the same house.

The Medical Officer of Health visited the locality and examined the premises on October 6th. He was informed that typhoid fever had appeared at intervals, for some years past in this particular spot. All the drains were found faulty, and delivering into a ditch not many miles away ; the privies were badly constructed with cesspools overflowing with storm-water, and together with the pig-sties, were close to the houses. The ground about the houses appeared to be "saturated with the accumulated filth of years." Notices were served to remove and re-build the privies. A drainage scheme will shortly be considered.

Puerperal Fever.—There was 1 case at Barnton in April, 1 at Davenham in July, and 1 at Leftwich (fatal) in August.

Measles and Whooping-cough were both prevalent during the year, but (not being notifiable) the number of cases is not known. As regards each disease, 9 deaths were recorded ; 7 being in the Weaverham sub-district. Of the 18 who died, 9 were under 1 year of age and 7 were between 1 year and 2 years.

School-closing.—At Moulton the schools were closed on account of measles from February 15th to May 29th. At Delamere, where no less than 60 cases of measles occurred within a few days, the school was closed from April 15th to May 11th. The school at Little Budworth was also closed, on account of the prevalence of measles, from September 14th to October 12th.

Diarrhoea was the registered cause of 6 deaths. One case (age 67 years) was at Hartford in July, 1 was at Winnington in July, and 1 at Marston in August (both under 1 year) ; 1 case (age 2 years) was at Barnton in September, and 2 cases (aged 4 years and $1\frac{1}{4}$) were at Lostock Gralam in December.

Phthisis was the cause of 26 deaths. This is equal to a death-rate of 1.15 per 1000 living.

Influenza was certified as the cause of 4 deaths. In February there was a case (age 2 years) at Weaverham, and a case (73 years) at Crowton. In November there was a case (55 years) at Rudheath, and in December a case (80 years) at Weaverham.

Irregular Notification.—Early in the year, the Medical Officer of Health noted that the requirements of the Infectious Disease (Notification) Act were ill-complied with. Many cases were notified too late for proper precautions to be enforced—for instance, a case of scarlatina notified only when peeling, no isolation having been attempted. It was found, also, that some medical practitioners considered it only necessary to notify one case per house, however many there might be : for instance—

in 2 cottages containing 10 cases 2 only were notified. The Medical Officer of Health accordingly put himself in communication with those who appeared to be in default, and has good ground for believing that the terms of the Act are now fully complied with.

A very important case was heard at the Northwich Petty Sessions on June 30th, when the Council summoned a labourer, of Wincham, for not notifying the existence of scarlatina in his house. The Bench convicted, and imposed a nominal penalty, as this was the first case of the kind ; but gave a strong warning that future cases would be dealt with more severely. Fortunately there have been no further cases.

Action taken to prevent spread of Infection.—All cases notified are promptly visited by one of the Inspectors, and (if thought necessary on his report) by the Medical Officer of Health also. Premises are examined and nuisances abated. Efforts are made to secure real isolation for a sufficiently long period ; leaflets setting forth the outlines of hygienic treatment are left with those in charge ; disinfectants are supplied gratuitously, and the sick room and infected clothing are eventually disinfected with sulphur.

As regards sulphur fumigation, the Medical Officer of Health has satisfied himself that in the opinion of experts, its efficacy as a method of disinfection is far inferior to spraying with a solution of perchloride of mercury. Accordingly, on August 7th, he recommended the adoption of this improved way of disinfecting rooms ; but the District Council have not yet sanctioned the purchase of the needful apparatus. The disinfection of bedding, clothes, &c., can only be satisfactorily effected by steam, and for this, the District Council have as yet furnished no apparatus.

On September 18th, the District Council accepted the advice of the Medical Officer of Health to offer to disinfect after deaths from phthisis. Even if in many cases the offer be refused, there will be a good effect from the Authority having given practical intimation that phthisis is infectious. Greater care in adopting proper hygienic measures will diminish the number of preventable cases of this common and fatal disease.

Isolation Hospital.—The Hospital at Marbury has been used for 7 cases of scarlatina, each urgent for special reasons connected with want of accommodation at home. The first case was admitted on February 1st, the second two days later ; both were discharged on March 13th. The third case was admitted on April 18th., the fourth on May 2nd ; both were discharged on June 10th. The fifth case was admitted on June 12th, the other 2 cases on July 1st. These were discharged on August 6th, and since this date the Hospital has not been in use. It is estimated these cases cost the District Council from £12 to £15

each. A very slight increase in expenditure will enable the Hospital to be kept open all the year round, with a permanent Staff. This would be of enormous assistance in dealing with infectious disease. Four cases were refused admission, 1 on March 6th, 2 on July 24th, and 1 on September 13th., yet in each of these cases admission was formally applied for. In the first, 2 further cases occurred in the same house six months afterwards; but it is possible there may have been fresh infection. In the last case, another followed in the same house in a fortnight.

Proposed Joint Hospital Accommodation. -- This matter has been pressed by the County Council on the attention of this and other District Councils in the Union; but so far no agreement has been arrived at.

Water-supply. -- The Surveyor (Mr. H. J. Bennett) reports that there are now works for water-supply in 23 townships. In all nearly 17,000 of the entire population of the Rural District have had an uninterrupted service throughout the year. The supply to the Union Workhouse (in the Northwich Urban District) has also been maintained. About one-half of the remaining 5,500 of the population have fairly good supplies from pump-wells; but the rest are often sorely plagued for the want of good water.

Water Analysis. -- The Medical Officer of Health analysed 14 samples of water, suspected of being polluted or for other reasons, of which 6 were found to be bad or very bad, and 3 were of doubtful purity.

Polluting a River. -- Proceedings were taken against a Company for polluting the River Dane with waste material from their works, and the proceedings were successful.

Sewering. -- The sewers in the 11 townships sewered and the outfall works have been maintained in good order. The principal outfall works were inspected by the County Medical Officer of Health in November. The sewers have been extended at Rudheath and Weaverham. Plans of new outfall works for Barnton, to cost £730, have been prepared and submitted to the Local Government Board. An Inquiry has since been held, but the Board's decision has not yet been received.

In Sandiway joint action by the County and District Councils, in laying a new road-drain for 900 yards at a cost of £195, has removed a nuisance caused by flooding of road and houses.

New Houses. -- Plans for 59 new houses have been approved during the year. This brings the number of houses in the district up to 4,708.

Houses Unfit for Habitation. -- The powers of the District Council under the Housing of the Working Classes Act have been brought into operation in the case of 4 cottages at Lostock Gralam, with successful results.

Nuisances have been abated at 89 houses during the year. In seven cases summonses had to be taken out.

Refuse Removal.—The number of houses scavenged weekly by contractors employed by the District Council was 2,236.

Slaughter-houses.—The registered slaughter-houses have had the requisite attention.

Canal Boats.—Eighty-one boats have been examined. Seven were required to undergo repair. One owner was warned for overcrowding a boat, and the owner of another boat was summoned and fined for not having it registered.

RUNCORN.

Rural District.

Medical Officer of Health—DR. J. ADAMS.

Population at Census, 1891—24661.

Estimated Population in middle of 1896—26467.

Area in Acres—49320.

Birth-rate per 1000 living—27.6.

Death-rate per 1000 living—12.1.

Death-rate from seven principal Zymotic Diseases—1.4.

Deaths under one year to 1000 births—95.

This district has, for registration purposes, been divided into three sub-districts. These are as follows:—

1. Budworth, having an area of 21,162 acres, and an estimated population of 8891. It includes Great Budworth, Seven Oaks, Antrobus, Crowley, Higher Whitley, Lower Whitley, Bartington, Stretton, Appleton, Walton Inferior, Walton Superior, Acton Grange, Moore, Keckwick, Hatton, Daresbury, Newton-by-Daresbury, Preston on the Hill, and Dutton.
2. Runcorn, having an area of 9,034 acres, and an estimated population of 5625. It includes Aston Grange, Aston-by-Sutton, Sutton, Stockham, Norton, Halton, Weston, and Clifton or Rocksavage.
3. Frodsham, having an area of 15,727 acres, and an estimated population of 9467. It includes Frodsham Township, Frodsham Lordship, Helsby, Alvanley, Manley, Newton-by-Frodsham, Kingsley, Norley, and Kingswood.

To the first of these sub-districts must now be added the area which lately formed the Cheshire portion of the Rural District of Warrington. This was combined with the Runcorn Rural District on December 28th, 1894.

The area and population at the Census of the portions of the Warrington Rural District thus added appear to be as follows:—

			Area in Acres.		Population, Census, 1891.
Part of Latchford	...	...	529	...	440
Grappenhall	...	...	1610	...	984
Thelwall (including Greenfield)	...	...	1258	...	770
			3397		2194

It is estimated that the population of these three added portions was, in the middle of 1896, as follows:—

			Population in 1896.
Part of Latchford	...	...	...
Grappenhall	...	...	...
Thelwall (including Greenfield)	...	...	...
			2484

The number of births registered in the whole district in 1896 was 732. The number of deaths registered in the whole district was in 1896 (excluding deaths not belonging to the district which took place in the workhouse at Dutton), was 322.

The birth-rates of the three sub-districts were respectively 26.9, 24.3, and 30.4. The death-rates of the three sub-districts were respectively 12.9, 10.8 and 12.0.

Of the whole number of deaths 5 were not certified by either medical practitioner or coroner, *i.e.*, 1.5 per cent. Twenty-nine formed the subjects of coroner's inquests, *i.e.*, 9.0 per cent.

The number of deaths due to the principal zymotic diseases was 39, viz:—5 scarlatina, 9 diphtheria, 2 membranous croup, 2 typhus fever, 4 typhoid fever, 10 measles, 5 whooping-cough, and 2 diarrhoea. There were also 2 deaths from puerperal fever.

Infectious Diseases Notified.—There were 241 notifications of dangerous infectious diseases in 1896. The number notified in 1895 was 206, the number notified in 1894 was 202. Of the cases notified in 1896, 161 were scarlatina, 43 were diphtheria. 7 were typhus fever, 10 were typhoid fever, 2 were puerperal fever, and 18 were erysipelas. A tabular statement of 73 outbreaks of infectious disease is given by the Medical Officer of Health in his Report, which shows the results of his investigations in respect of the most important cases notified.

The number of cases notified is greater than in any year since the adoption of the Infectious Disease (Notification) Act, with the exception of 1893, the year in which small-pox was epidemic. Notwithstanding this the zymotic diseases death-rate is the lowest recorded since 1886.

The Isolation Hospital at Moore is still retained, and kept in readiness should small-pox appear in the district. As no case occurred during 1896, the Hospital was not used.

The Steam Disinfector.—The Medical Officer of Health draws attention to the fact that the disinfecter (Washington Lyon's) only remains on its present site, near the Hospital, during the pleasure of the Manchester Ship Canal Company. Fifty lots of bedding and clothing were disinfected therein during the year.

Measles.—This disease not being notified, the extent of its prevalence can only be judged of through the death-rate returns, or through the breaking out in schools. There were 3 deaths at Kingsley, 2 at Frodsham, and there was 1 at Frodsham Lordship, 1 at Weston, 1 at Appleton, 1 at Budworth, and 1 at Hatton.

Scarlatina affected the district almost as severely in 1896 as in 1895, when there were 163 cases and 5 deaths. In 1896 the disease invaded 25 of the 39 townships in the district ; the disease being most prevalent at Frodsham (27 cases), Frodsham Lordship (10 cases), Appleton (14 cases and 2 deaths), Acton Grange (8 cases and 1 death), and the district of the Daresbury School Board, viz. :—Daresbury, Preston o' th' Hill, Keckwick, Hatton, Moore, and Newton-by-Daresbury (in all 52 cases).

The Medical Officer of Health has usually discussed the question of isolation and disinfection in this part of his Report, as it is in connection with scarlatina that the need of efficient isolation and disinfection is most felt. The disinfecting apparatus is not in a conveniently accessible place, and there is no Isolation Hospital except the temporary erection for small-pox cases. Further isolation accommodation is required, especially for scarlatina. In view of the possible injury they may disseminate around them, 161 cases of scarlatina, occurring among a population of 26,467, require more both as regards disinfection and isolation, than it is at present in the power of the district sanitary officials to carry out.

Diphtheria occurred, during 1896, with a frequency, virulence and fatality hitherto unknown in the district. At Sutton were 12 cases and 3 deaths, at Frodsham Lordship 8 cases and 4 deaths, at Frodsham were 6 cases, at Alvanley 8 cases, at Helsby 2 cases and 1 death, and at Appleton 2 cases. At Antrobus there was 1 case (fatal), at Dutton 1 case, at Walton Inferior 1 case, at Aston 1 case and at Clifton 1 case.

The first case of diphtheria notified was at Walton Inferior in January. It occurred in a newly built house, the sanitary arrangements of which leave nothing to be desired. The origin of the disease was not ascertained. The disease was not communicated to anyone. The next case notified was at Sutton in June, and the next at Aston in July ; in neither case was the origin traced. Then 2 cases occurred at Riley Bank, Frodsham in August, in a house where slight sanitary defects were discovered, and other cases occurred in Frodsham in September,

at houses having sanitary defects. In the same month the disease appeared at Sutton and remained in the district till the end of the year. It did not spread beyond the little group of cottages (Bone Works Cottages) where it arose, there being in all 12 cases (3 fatal in 5 cottages). The cottages were newly built and little fault could be found with their sanitary arrangements. This outbreak was attributed to the use of an impure drinking-water, an irregular, not recognised supply, the use of which was ordered to be discontinued. A good water was available a little distance away. The disease was propagated mainly if not entirely by personal infection. The outbreak in Frodsham Lordship in September and October was at Five Crosses, and it is thought may have been connected with the previous cases at Frodsham, or the general insanitary condition of the cottages at Five Crosses may account for it. These little houses are seldom free from disease, 4 were infected in this outbreak. At Alvanley the first case occurred in October and was ascribed to the use of impure drink-water. The infection was communicated, 8 in all having the disease in 3 houses. As the disease invaded the school house, the schools were closed. The diphtheria at Appleton was at Cliff Hill in October. There was nothing noted where the disease occurred except that the premises were damp. Of 3 cases in 3 houses reported at Frodsham in November and December, 2 appeared to be an extension of the outbreak at Bone Works Cottages, Sutton, and one was attributed to sanitary defects. At Antrobus in December a case of diphtheria was reported which recovered, and in the same house a death took place which was ascribed to croup. The house was damp, there were open drains in the yard and an untrapped grid in the wash-house. The 2 cases (one fatal) at Helsby, in one house, there is some reason to believe were infected outside the County.

Croup.—There were no cases notified as croup, but 2 deaths were ascribed to this in the Registrar's returns. One was the case just referred to at Antrobus, and the other was a case at Norley.

Whooping-cough.—The 5 who died from this disease were all under five years of age. Four of the deaths were in Frodsham, and 1 was in Frodsham Lordship.

Typhus Fever.—For the first time since the Medical Officer's connection with the district in 1883, typhus fever made its appearance. A more or less vagrant family came to Sea Lane, Halton, from a part of Liverpool which was infected with typhus fever, and shortly after their arrival typhus fever broke out among them, affecting the whole imported family, 7 in all. At first the illness was regarded as scarlatina, and one or two cases were thus reported; then a death occurred, and this was certified and registered as scarlatina. About this time the patients changed their medical attendant, and the outbreak was

reported as typhus fever, 2 of the patients dying and their deaths being certified and registered as typhus. There seems no doubt that the whole family suffered from typhus fever alone, and that the first death was really due to this disease, but as it was certified and registered as scarlatina, it must appear thus in the returns. Owing to typhus fever occurring so rarely, it is not at all surprising the nature of the malady was not recognised earlier. It is at least satisfactory that the disease did not arise from any cause within the district, and that having arisen it did not spread beyond the two houses occupied by the newly-arrived family. The neighbourhood is fairly populous, and the sanitary arrangements of houses there are not all that could be desired. Nearly all the bedding, clothing, etc., of the infected family was taken to Moore and burned, compensation being made to the patients for the destruction.

Typhoid Fever.—There were only 10 cases of this disease notified in 1896. The mean number notified in 1890-95 was over 24. Of 3 cases at Frodsham, 1 (in March) was in a house where there were slight sanitary defects, and 2 (in May) were in a common lodging-house—condition unsatisfactory. At Frodsham Lordship, 2 cases occurred respectively in June and July in separate houses, not defective in any way—the first was fatal and the second a mild case, probably imported. At Aston there was a fatal case in May, the source of disease not being ascertained. At Appleton, there was a fatal case in April, and 2 cases (1 fatal) in August. One patient was a canal-boatman, who came home ill. At Hatton, there was a case in November—the cause not ascertained.

Diarrhœa.—The decrease in deaths from diarrhœa is remarkable and unaccountable. In 1896 there were but 2 deaths (1 in Frodsham Lordship and 1 in Kingsley), whereas in 1895 there were 20 deaths, in 1894 there were 9 deaths, and in 1893 there were 35 deaths.

Puerperal Fever.—Two cases were notified—both were fatal. In one, the nurse in attendance was interdicted from following her avocation for a period of one month.

Erysipelas.—The 18 cases notified were not connected with one another. No deaths occurred. No action was taken with reference to them.

Water-supply.—The portions of Appleton known as Stockton Heath and Wilderspool have a good and plentiful supply from the Warrington Water Works, and the greater portion of the villages of Walton Superior and Moore are supplied from the same source. The supply of a portion of Bartington is still defective, but the financial aspect of the question makes it difficult to propose a remedy. At Dutton water is still needed. No improvement has yet been made in the water-supply to houses situated in Northwich Road, in the

townships of Aston, Preston-o'-th'-Hill, and Dutton. The Medical Officer of Heath again repeats his opinion that the water-supply at Dutton Workhouse would yield a satisfactory supply for all the houses there in need of it. Additional motive power has been provided for the pump at the Workhouse, which would lessen, if not abolish, the difficulty hitherto experienced. The Guardians have been approached with respect to this, but no decision has been arrived at.

Aston Heath is still in need of a good supply. The extension of the Liverpool (Vyrnwy) mains to Aston should have been continued to Aston Heath. It would have been comparatively inexpensive while the work was in hand. Clifton still has the improved supply. Halton, Weston Point and the village of Weston are supplied from the Runcorn Urban Authority's Water Works. It is proposed to extend the mains to Halton Common. The village of Norton is supplied from the Liverpool Water Works, but the mains require to be extended. An attempt has been made to improve the supply to the large dairy farm at Norton, but it is still doubtful whether the improved supply will prove sufficient in quantity or acceptable as to quality, being more or less intermittent, and its condition varying. At Stockham the water-supply to one of the farms was condemned after analysis and improvements were ordered and carried out. An inquiry has been held by an Inspector of the Local Government Board with reference to the water scheme for the township of Sutton, and sanction obtained for borrowing a portion of the cost. Difficulties have, however, arisen and caused delay. It is hoped that by next year the scheme will be completed. The supply to Weston, from the Runcorn Water Works, which had been intermittent and otherwise defective, has been made quite satisfactory.

There is still need of an improved water-supply at Alvanley. The suggested extension of the Helsby supply to Alvanley has not been carried out, nor is it likely to be at present. The new supply at Frodsham has proved a success, and every house on the line of the water mains has now been supplied. Many of the inhabitants who were previously averse to the scheme are now loud in praise of it. At Frodsham Lordship the want of a water-supply is still pressing. Various schemes have been considered by the Parochial Committee, but nothing has been decided upon. At Helsby praise is due to the Water Company for laying their mains so as to be available for as large a portion of the houses in the township as possible, but their charges (or equivalent of water-rate) are much higher than the District Council could enforce payment of, in the event of the Council requiring to issue notice to occupiers or owners of houses to obtain a supply from the Company's mains or from other sources. There is still room for considerable improvement in the Kingsley water-supply, notwithstanding what was recently done for the lower end of the village. The

scheme for the supply of Manley is working satisfactorily. At Norley there has been no improvement in the supply to Blackmere Lane. The Parish Council has considered the question of providing a general supply for the township, but owing to the houses being so scattered the cost would be out of all reason, so no progress has been made.

In all 92 houses have during the year been supplied with water from the public mains.

The Medical Officer of Health remarks that the prevalence of diphtheria in various parts of the district, frequently in connection with water-supplies, should lead the District Council to give full attention to the provision of good water. If the Liverpool Corporation would consent, the supplies of good water in the district might be much increased by tapping the Liverpool mains where available.

Only 10 samples of water were submitted for analysis during the year, and of these only 2 were condemned, 1 being the supply associated with the outbreak of diphtheria at Alvanley.

Sewering.—Nothing special calls for note—no extensive operations have been undertaken or even suggested. In all, sewers have been extended for 308 yards. There are difficulties looming ahead at Helsby and at the outfalls along the line of the Manchester Ship Canal.

The suggested extension of sewers from Frodsham Lordship to Five Crosses has not been carried out owing to expense.

Refuse removal.—The Authority do not undertake the collection and disposal of excrement and refuse in any part of their district, except at Stockton Heath, and here the work has been done much better during the past year. Elsewhere the emptying of middens, removal of refuse, &c. is done by the occupiers or owners or both in conjunction. They have to dispose of the stuff as best they can, and in many cases this is a matter of great difficulty. Under these circumstances very good results can hardly be expected.

The Weston Parish Council's plan to meet the requirements of the township as regards the removal of midden refuse, by providing sites for tipping in each ward, was disapproved of by the Local Government Board. The stuff is now being taken out and used on the land.

Building Bye-laws have now been adopted at Halton and are in force.

Reduction of Area of District.—The Wilderspool portion of the Township of Appleton has been removed from the Runcorn Rural District, and since November has formed a part of the Borough of Warrington. The Manchester Ship Canal forms the new boundary.

The Private Street Works Act has been adopted for the remainder of Appleton, including Stockton Heath. As

Stockton Heath is increasing and likely to increase, this Act will no doubt prove of use.

The Inspector (Mr. Jas. Farrington) furnishes information as to matters coming under his supervision.

Public Health (Water) Act, 1878.—The number of certificates granted for the occupation of new houses, during 1896, was 34. The number of houses occupied under such certificates was 82—4 were supplied by pumps and wells, 3 by running pipes, 3 by rain-water storing tanks, and 72 from the public mains.

Nuisance Abatement.—Twenty-three nuisances were reported and many others were discovered. The number of formal notices served to abate nuisances was 56, and the abatement of many nuisances was obtained without serving formal notices. One case of over-crowding was reported and abated.

Legal Proceedings Taken.—In one instance legal proceedings were taken for a breach of the Building Bye-laws, and in another instance legal proceedings were taken to enforce the abatement of a nuisance. Convictions were obtained.

House Unfit for Habitation.—One house, unfit for human habitation, was condemned and closed.

Lodging-houses were inspected as time permitted.

Bake-houses, Dairies, &c., were also inspected as time permitted.

Slaughter-houses were inspected. One license for a slaughter-house was applied for and granted.

Canal Boats.—The number of boats inspected during the year was 81. In 4 instances contraventions of the Canal Boats Acts were noted, and notices served accordingly.

STOCKPORT.

Rural District.

Medical Officer of Health—DR. T. MOORE.

Population at Census, 1891—10159.

Estimated Population in middle of 1896—10506.

Area in Acres—8937.

Birth-rate per 1000 living—32.9.

Death-rate per 1000 living—12.5.

Death-rate from seven principal Zymotic Diseases—0.6.

Deaths under one year to 1000 births—87.

Dr. F. Cant was Medical Officer of Health for a portion of this Rural District, known as the South Werneth Sub-District, during the first quarter of 1896. This Sub-District was

part of the township of Werneth, the remainder being in the Borough of Hyde.

The area of which Dr. Moore is Medical Officer of Health was, at the beginning of the second quarter, increased by the addition thereto of South Werneth. Dr. Moore's Report is, therefore, for the entire Rural District and refers to the whole of 1896.

For drainage purposes the Stockport Rural District consists of :—

- (a) The Drainage-area District of Hazel Grove, comprising the Townships of Bosden, Norbury, Torkington, Offerton and the East Ward of the Township of Bramhall.
- (b) The North and South Wards of the Township of Bramhall.
- (c) The Township of Handforth.
- (d) The Township of Brinnington, except 133 acres belonging to the County Borough of Stockport.
- (e) The Township of South Werneth, except 662 acres belonging to the County Borough of Hyde.

Each of these divisions of the District is in a different watershed.

The area and census-population of the Townships or portions of Townships in the District are as follows :—

				Area in Acres.		Population at Census.
Bosden	...	...	...	492	...	2342
Bramhall	...	...	...	2885	..	3365
Brinnington	...	...	...	645	...	485
Handforth	...	...	...	1311	...	794
Norbury	...	...	...	1249	...	1495
Offerton	..	...	...	623	..	372
Torkington	...	...	...	823	...	294
South Werneth	...	...	...	909	...	1012

The estimated population in 1896, and the births and deaths during the year, as regards these Townships or portions of Townships are as follows :—

			Population in middle of 1896.	Births.	Deaths.
Bosden	...	...	2471	65	28
Bramhall	...	...	3472	93	39
Brinnington	...	...	505	2	7
Handforth	...	...	809	21	12
Norbury	...	...	1553	36	23
Offerton	..	...	386	9	6
Torkington	...	...	298	5	4
South Werneth	..	...	1012	21	13

The number of births in the whole Rural District was therefore 252, and the number of deaths 132.

The number of deaths of infants under one year old was 22. This is equal to 87 per 1,000 births, a very small proportion.

The number of deaths from the principal zymotic diseases was 7, viz :—2 diphtheria and membranous croup, 3 typhoid fever, 1 whooping-cough, and 1 diarrhoea. There was also one death from puerperal fever.

Infectious Disease.—The number of cases of infectious disease notified was 46, viz :—17 scarlatina, 4 diphtheria, 2 membranous croup, 17 typhoid fever, 2 continued fever, 1 puerperal fever, and 3 erysipelas. A case of scarlatina at Bramhall was removed to the Stockport Borough Hospital, and a case of typhoid fever at Handforth was removed to the Hyde Hospital. All the other cases were treated at home.

Scarlatina.—Seven cases of this disease occurred at Bramhall, 6 at Brinnington, 3 at Bosden, and 1 at Norbury.

Diphtheria and Croup.—The cases notified as diphtheria occurred at Bramhall, Brinnington, Offerton and South Werneth. The case at Brinnington proved fatal. The cases notified as croup occurred at Bramhall and South Werneth. The case at Bramhall proved fatal.

Typhoid Fever.—There were 7 cases at Bramhall, 6 at Bosden, 2 at Brinnington, 1 at Handforth and 1 at Offerton. Two of the deaths occurred at Bramhall and 1 at Bosden.

Infectious children playing in the Streets.—The Medical Officer of Health draws attention to the danger that oftentimes arises from a want of care in isolating children recovering from an infectious disease, or belonging to an infected household. He notes that in mild cases children are allowed to play in the streets with others. He notes also that although great care is exercised by the School Authorities to keep children of infected families from attending Day Schools, they are frequently sent to Sunday Schools, and in this way infection may be spread.

Nuisances from Deficient Drainage.—The north and south wards of Bramhall are very much in need of a comprehensive scheme of drainage. In this part of Bramhall are three distinct residential districts—Great Moor, Davenport, and Bramhall Village. These are three hamlets (where the population is rapidly increasing) at present drained for the most part by open ditches, which are a prolific source of nuisance during summer, particularly in a dry season. It is important that a comprehensive scheme of drainage should be at once proceeded with. There is a probability that the Workhouse will be removed from Stockport to Great Moor, and the consequent large addition to the population of this part of the district will make the nuisance from the ditch-drains positively dangerous.

Neither Handforth nor Brinnington has any drainage other than into open ditches and cesspools. As these places develop the need of efficient drainage is increased. A decided improvement has been recently effected at Handforth, where one open ditch has been piped for 80 yards.

Some of the unpaved streets in Bosdon, Norbury, and Bramhall are in a very bad condition, which is especially manifest after frosty and wet weather. The mud accumulates in these streets and foul water lodges on them, rendering them dangerous to the public health.

Water-supply.—The water supplied to the district is generally very good, and comes from the Stockport Water Works Company. This has for years been gradually taking the place of water from old wells and pumps.

Dairies, &c.—There are 19 premises registered as dairies, cow-sheds or milk-shops, which are all visited from time to time by the Inspector.

Emptying of Ashpits.—The systematic and regular emptying of Ashpits by the Authority is a decided improvement on the old method—leaving the pits to be emptied by farmers at irregular intervals. The Inspector reports that during the year 1224 emptyings were effected at a cost of £149 2s. 6d.

Outfall Works.—The old filter-beds at Offerton have been removed, and new and improved ones constructed. A tipping-ground has been provided for sludge.

Recreation Ground.—The plot of land set apart for a Recreation Ground at Hazel Grove has been much appreciated by the young people and will no doubt prove a great advantage to the district.

Vaccination is regularly attended to, and the necessity for it seems to be fully appreciated by the public generally.

Report of Surveyor and Inspector.—Mr. H. H. Turner submits a report on the various matters coming under his supervision. In all 208 nuisances were entered in the books and investigated. Formal notices were served in respect of 93, and 70 were abated without formal notice. The drains of 60 houses were repaired, 6 farm buildings and yards and 39 privies and ashpits were repaired. In 24 instances ditches were cleansed and 4 defective water-supplies were remedied. In 15 instances defective drains have been repaired by the District Council. Three cases of overcrowding were dealt with.

Houses unfit for Habitation.—Three dwelling-houses unfit for habitation have been condemned.

New Houses, &c.—Plans have been passed for the erection of 101 new dwelling-houses, for alterations to 36 houses, for 5 warehouses, 3 chapels (2 temporary) and 5 stables. In supervising buildings in course of erection the surveyor noticed

12 cases of deviation from bye-laws. In the course of the year 3 bridges were repaired and 4 dangerous fences, &c., were repaired. Seven additional lamps were erected.

TARVIN.

Rural District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—12752.

Estimated Population in middle of 1896—12752.

Area in Acres—56873.

Birth-rate per 1000 living—26·8.

Death-rate per 1000 living—14·2.

Death-rate from seven principal Zymotic Diseases—1·8.

Deaths under one year to 1000 births—102.

This large Rural District is not divided into sub-districts, but it includes no less than 58 Townships. These are as follows:—Broxton, Tilston, Horton, Grafton, Carden, Stretton, Caldecott, Crewe, Farndon, Churton-by-Farndon, Barton, Clutton, Kingsmarsh, Coddington, Chowley, Aldersley, Harthill, Edgerley, Churton-by-Aldford, Aldford, Buerton, Lea Newbold, Churton Heath, Saighton, Iddinshall, Waverton, Huxley, Hatton, Tattenhall, Golborne Bellow, Newton-by-Tattenhall, Handley, Golborne David, Foulk Stapleford, Bruen Stapleford, Burton, Clutton Hoofield, Dutton, Willington, Kelsall, Ashton, Mouldsworth, Horton-with-Peele, Tarvin, Hockenhull, Pryors Hayes, Barrow, Gilden Sutton, Cotton Edmunds, Cotton Abbotts, Rowton, Huntington. Tiverton, Tilston Fearnall, Beeston, Burwardsley, Shocklach Church and Shocklach Oviatt.

The two last-named Townships were transferred to the Tarvin Rural District Council on September 30th, 1895. The area and population (as given in the Census Report) then added to the District, was as follows:—

	Area in Acres.	Population at Census.
Shocklach Church ...	1278	158
Shocklach Oviatt (including Shock- lach Green) ...	1048	158

The entire population of the District, as given above, includes the enumerated population of the Tarvin Union Workhouse, situated at Great Boughton, in the Chester Rural District.

In 1896, the number of births registered in the District was 342, and the number of deaths (including 11 occurring outside the district but belonging thereto) was 182. The birth-rate is 0·1 below the mean birth-rate in 1892-95, and the death-rate is 1·0 below the mean death-rate in 1892-95.

There were 23 deaths from the chief zymotic diseases, viz. :—4 scarlatina, 1 diphtheria, 1 membranous croup, 1 typhoid fever, 6 measles, 5 whooping-cough and 5 diarrhoea. This is equal to a zymotic death-rate of 1.8, *i.e.* 1.0 above the corresponding death-rate in the four years 1892-95. There were also 13 deaths from phthisis, 26 from bronchitis or pneumonia, 21 from heart disease and 8 from injuries.

Cases of Infectious Disease Notified—There were 105 cases of infectious disease notified, viz. :—91 scarlatina, 12 diphtheria, 1 puerperal fever and 1 erysipelas. Of these 9 cases of scarlatina were removed to the Fever Hospital at the Chester Infirmary.

Each household was visited, and disinfection was attended to. Where required, action was taken for the remedy of structural defects on premises. There was no suspicion that any of the infectious disease occurring was spread by means of water, milk or other article of food.

The Medical Officer of Health acknowledges the courtesy of medical practitioners in responding to the supplementary questions on the notification forms, and in doing what they can to prevent the spread of infection.

Scarlatina.—The cases of this disease occurred over a very wide area, and the number of cases notified was much increased by successive or simultaneous attacks in the same family. Four cases in a family, one of which proved fatal were due to infection brought by a member of the family who had been the six weeks previous to his coming home in a Fever Hospital in London. The death in this group of cases was chiefly attributable to the patient's constitutional debility.

Schools were closed by the managers for several weeks at Farndon, Aldford, and Burwardsley.

The spread of the disease was decidedly curtailed by the action taken.

Erysipelas.—The case of this disease notified was found being nursed by the village midwife. On being remonstrated with she retired from the case.

The Medical Officer of Health has visited the district frequently for the investigation of cases of infectious disease and general inspection.

Inspectors' Reports.—The arrangement by which the duties of Inspector of Nuisances are undertaken by the District Surveyors, works admirably. These officers take a great interest in their sanitary work, and give a good account thereof.

Mr. Piggott (who has the northern division of the district) reports 131 notices served or letters written, and 109 nuisances abated. The necessary work comprised the repairing of 22 houses, supplying with water 18 houses, altering 23 privies to dry-earth closets, cleaning 3 wells, &c. He has kept under

inspection 27 milk-sellers' premises and 7 bake-houses, and done the work required in connection with cases of infectious disease notified.

Mr. Hughes (who has the southern division of the district) reports 62 notices served, resulting in repairs, &c., at 20 houses, 27 house-drains being repaired, cleansed or trapped, the repair, &c., of 12 privies, the provision of 9 new privies, the conversion of a privy into a water-closet, the cleansing and repairing of 10 wells, and the removal of 8 accumulations of refuse. He has also done the work required in connection with cases of infectious disease notified.

There have been few complaints of overcrowding in either division of the district.

The Sewage of Tattenhall.—The plans for dealing with this sewage have been varied and perfected, but difficulty has been experienced in acquiring a suitable site for outfall works, and a further modification is being devised to meet this difficulty.

Sewers.—The district being thinly populated, and not having many large villages, there are few sewers, and water-closets are comparatively rare.

Ashpits, &c.—Throughout the district most of the houses are provided with ashpits and privies. These, in some instances, are emptied at short intervals, the contents being used on adjoining land, but generally the emptying awaits the convenience of neighbouring farmers. The District Council have aimed at getting the privies modified so as to approximate as much as possible to earth-closets, and much has been done in this direction.

Water-supply.—During the year seven samples of water were submitted for analysis, and analysed by the Medical Officer of Health. Two were found to be water of doubtful purity and one was found to be very bad. Action was taken accordingly. One new well has been sunk. Measures are being taken by the District Council for supplying Tiverton, Tilston and Beeston with water at the cost of the townships, by means of wells, lifting apparatus and distributing mains.

Pollution of a Water-course.—During the year proceedings were taken before the Magistrates and an order granted with costs against the proprietors of a Bone Works, restraining them from discharging offensive liquids into a water-course near a highway.

TINTWISTLE.

Rural District.

Medical Officer of Health—DR. W. E. S. BURNETT.

Population at Census, 1891—2576.

Estimated Population in middle of 1896—2630.

Area in Acres—13615.

Birth-rate per 1000 living—23·1.

Death-rate per 1000 living—15·9.

Death-rate from seven principal Zymotic Diseases—1·9.

Deaths under one year to 1000 births—131.

This Rural District contains part of the Township of Tintwistle, and the whole of the Townships of Hattersley and Matley. The area and population as enumerated at the Census are given as follows :—

		Area in Acres.		Population at Census.
Part of Tintwistle	...	11850	...	2116
Hattersley	...	1060	...	286
Matley	...	705	...	174

The area exclusive of moorland is returned as 4646 acres.

In 1896, the number of births registered in the district was 51, and the number of deaths registered in the district was 42. The birth-rate was 3·2 below the mean birth-rate in 1892-95, and the death-rate was 0·7 below the mean death-rate in 1892-95.

One death was due to scarlatina, 1 to membranous croup, 1 to puerperal fever, 1 to measles, 1 to whooping cough, and 1 to diarrhoea. There were also 2 deaths due to phthisis, 6 to bronchitis or pneumonia, 6 to heart disease, and 3 to injuries.

Infectious Disease Notified.—Eleven cases of infectious disease were notified, viz.: 3 scarlatina, 1 diphtheria, 1 membranous croup, 3 typhoid fever, 1 puerperal fever and 2 erysipelas.

Scarlatina.—The first case of this disease occurred in Old Road in July. It appeared to have been contracted at Hadfield where scarlatina was prevalent at the time. The disease was communicated to another child in the same block of buildings, and apparently to two other children living a short distance from this block. One of the latter was notified as diphtheria (the only case so notified in 1896) but the Medical Officer of Health believes that it was scarlatina.

Croup.—The case notified as membranous croup was a child convalescent from measles when attacked with croup. The case occurred at Hattersley in November, and terminated in death.

Typhoid Fever.—One case of this disease occurred at Newton Square, the second occurred at Shopwell Farm, Hatters-

ley, and the third also at Hattersley. The main drain from some contiguous property passed under the house where the case was in Newton Square, and there was an open grid near the back door, communicating with this drain. The drainage and surroundings of Shopwell Farm were satisfactory. As the occupier supplied milk to a number of customers in Hyde, this case was carefully isolated and his discharges disinfected, and a temporary dairy was made use of, away from the house. As regards the third case, the premises where it occurred were not insanitary, and the origin of the disease could not be traced.

Puerperal Fever.—The one case notified occurred at Arnfield Lane, in February, and terminated in death. The patient was attended by a midwife, and the Medical Officer of Health gave this woman instructions as to personal disinfection, and advised her to discontinue attending cases for a few weeks.

Erysipelas.—A case was notified in September and another in December, one being at Tintwistle and the other at Hattersley. The houses where the cases occurred were clean and well ventilated, and the sanitary condition and environment particularly good.

Measles.—An epidemic of measles, similar to that which visited the district in the early part of 1893, commenced in the latter part of December. The disease was prevalent not only in this district, but in Hadfield, Glossop, Dinting, and Hollingworth. It was not of a very virulent type, but in the wide area through which it prevailed, caused several deaths, principally due to complications following the disease. The attendances at schools were largely effected, and the Medical Officer of Health advised the closing of the Day and Sunday Schools for several weeks. This was done, and appeared to have some effect in checking the spread of the disease.

Water-supply and Milk.—The water-supply has been abundant and good throughout the year. There are no milk-shops in the district, the milk being supplied from farms outside.

Inspection.—Periodical inspections have been made both by the Medical Officer of Health and the Inspector, most attention being given to parts most requiring it. Slaughter-houses have been duly inspected.

There are no offensive trades carried on in the district, and there are no common lodging-houses.

Nuisance Abatement.—The Inspector has attended to a large number of nuisances—defective or obstructed drains, filthy closets, overflowing middens, &c. Some sink waste-pipes have been disconnected on trapped gullies, some cesspools have been done away with, &c.

WIRRAL.

Rural District.

Medical Officer of Health—DR. G. A. KENYON.

Population at Census, 1891—18707.

Estimated Population in middle of 1896—16494.

Area in Acres—38608.

Birth-rate per 1000 living—28·2.

Death-rate per 1000 living—12·2.

Death-rate from seven principal Zymotic Diseases—1·5.

Deaths under one year to 1000 births—115.

This district has for registration purposes been divided into four sub-districts, viz. :—Neston, Eastham, Bebington and Woodchurch. Till quite recently the district had but three sub districts, Brimstage, Poulton-cum-Spital and Storeton (now constituting the sub-district of Bebington), being part of the sub-district of Eastham. Keeping to the old arrangement the sub-districts are as follows :—

1. Neston, having an area of 12,668 acres, and an estimated population of 3,665. It includes Puddington, Burton, Ledsham, Willaston, Ness, Raby, Thornton Hough, Gayton and Heswall-with-Oldfield.
2. Eastham, having an area of 11,287 acres, and an estimated population of 8,558. It includes Great Sutton, Little Sutton, Whitby, Overpool, Netherpool, Childer Thointon, Hooton, Eastham, Brimstage, Poulton-cum-Spital and Storeton.
3. Woodchurch, having an area of 12,610 acres, and an estimated population of 3,750. It includes Prenton, Woodchurch, Landican, Thingwall, Barnston, Pensby, Irby, Arrow, Thurstaaston, Caldy, Frankby, Greasby, Grange (part of), Upton, Saughall Massie, and Moreton.

To the Rural District, as thus constituted, must now be added what has been till lately the Rural District of Birkenhead. This consists of Bidston-with-Ford, having an area of 1713 acres, and Noctorum, having an area of 330 acres. The population of the Birkenhead Rural District at the Census was 456, and the estimated population for 1896 is 521.

It will be noted that the estimated population of the Wirral Rural District is much below the population recorded at the time of the Census. This is due to the fact that among those enumerated at Whitby, Netherpool, Hooton and Eastham, were 2432 persons engaged in the construction of the Manchester Ship Canal. These formed no part of the local population after 1892.

The birth-rates of the 3 sub-districts in 1896, were respectively 35·4, 26·6 and 26·4. The death-rates of the 3 sub-districts in 1896, were respectively 14·4, 11·6 and 15·4. As there were 9 births and 3 deaths in what used to be known as the Birkenhead

Rural District, the birth-rate was 18 per 1000, and the death-rate exactly 6.

The births registered in the whole Wirral Rural District numbered 466. The deaths registered in the whole Wirral Rural District (excluding 25 deaths occurring within the district among persons not belonging thereto) numbered 201. The birth-rate is 0·7 above the mean birth-rate in 1892-95; and the death-rate is 0·6 below the mean birth-rate in 1892-95.

There were 25 deaths from the principal zymotic diseases, viz:—2 scarlatina, 5 diphtheria, 2 croup, 1 typhoid fever, 7 whooping-cough and 8 diarrhoea. There was one death from rheumatic fever. There were also 19 deaths from phthisis, 28 from bronchitis, or pneumonia, and 25 from heart disease.

Infectious Diseases Notified.—Under the Infectious Disease Notification Act, 80 cases were reported, viz:—23 scarlatina, 29 diphtheria, 12 typhoid fever, 2 puerperal fever and 14 erysipelas. The only case removed to hospital was one of scarlatina. The houses where cases occurred were visited, action was taken for disinfection and for remedying any insanitary conditions discovered; as well as for preventing attendance at schools of children from infected houses.

The scarlatina cases were few and scattered over the district, and there was at no time any general spread of the disease.

The diphtheria cases occurred chiefly in certain townships in the Woodchurch sub-district, at the beginning of the year. At Greasby there was a general prevalence of sore-throat, and the schools were closed by the managers in consequence, but there was no tendency for the spread of the disease, from person to person, outside infected families. At Upton irregularities in the emptying of ashpits was suspected of contributing to the spread of diphtheria, and on the advice of the Medical Officer of Health, the work of removing ashpit-refuse was arranged for by the District Council. The prevalence of the disease was not connected with the water or milk supply or a common sewerage system.

The Medical Officer of Health has visited the district frequently, making general and special inspections, and investigating outbreaks of disease.

The Ship Canal Bill.—The Council's Engineer having reported that powers sought in a Parliamentary Bill promoted by the Manchester Ship Canal Company might injuriously affect Ellesmere Port, the Council decided to appear with other Bodies in opposition to the Bill. However, the clauses of the Bill objected to were struck out.

Sewering.—The Council have endeavoured to obtain the sewerage of the Fender Valley, and have appealed to the Corporation of Birkenhead and landowners to combine for this purpose. A survey has been made by the Council's Engineers

(Messrs. Below & Priest), but although all the parties interested appear to favour the scheme, no satisfactory agreement as to the provision of funds has been arrived at. Some improvements in the sewerage of Childer Thornton, Heswall, and Willaston are at present in progress.

Building Bye-laws are now in force throughout the district, and Mr. Hughes has been appointed Building Surveyor, to see that they are complied with.

Improvements at Thornton Hough.—Nearly the whole of the village of Thornton Hough has been completely rebuilt by the proprietor, Mr. Lever, in handsome half-timber work. Each house has a fixed bath and modern conveniences. Public-rooms and a pleasure ground are also provided.

Insanitary Houses Demolished.—At Childer Thornton a large block of back-to-back houses, known as "the barracks," erected more than fifty years ago for the accommodation of the men employed in the construction of the Chester and Birkenhead Railway, has been acquired by Mr. H. A. Latham, and by him pulled down. It is being replaced by neat, well-planned cottages.

Water-supply.—The district is generally supplied with water from the Wirral Water Works. Bidston-with-Ford and Noctorum are supplied from the Birkenhead Water Works. During the year a sample of water from a well at Heswall was submitted for analysis, and found by the Medical Officer of Health to be unfit to drink.

Refuse Removal.—The District Council contract for the removal of privy and ashpit refuse at Ellesmere Port, Little Sutton, Childer Thornton, Eastham, Heswall and Upton.

Inspector's Report.—Mr. Wallis has (owing to the appointment of Mr. Hughes as Building Surveyor) been relieved of inspecting buildings in course of erection. He has however been appointed Inspector of Bidston with-Ford and Noctorum, so that he is now Sanitary Inspector for the whole district. He continues to give great attention to his duties, which in addition to the more ordinary work include the care of the sewers and the flushing thereof, and the supervision of the contractors who remove the ashpit refuse. Mr. Wallis reports that he has specially inspected 1610 houses, and served 134 notices for the amendment of sanitary defects, &c.. These have resulted in 65 houses being cleansed, repaired and whitewashed, 58 houses being disinfected after infectious disease, the drains of 54 houses being cleansed, repaired and ventilated, 16 privies being repaired and been converted into water-closets. He also reports that in 13 instances deposits of refuse have been removed and in 7 instances animals so kept as to be a nuisance have been removed. One case of overcrowding was reported and abated.

Dairies, &c.—Mr. Wallis has under inspection 259 dairies and cow-sheds. These are visited from time to time to see that they are kept clean and in order, and that the white-washing is regularly done.

Slaughter-houses.—There are 7 of these in the district inspected from time to time by Mr. Wallis.

Canal Boats, Workshops, and Bake-houses also receive the Inspector's attention.

Parish Councils.—The Parish Council of Ellesmere Port have taken over the duties of the former Parochial Committee. The Parish Councils of Little Sutton, Childer Thornton, Heswall, Eastham, Upton, and Thornton Hough make an active use of their powers.

Administrative County of Chester.

APPENDIX OF STATISTICS, FOR 1896.

TABLE I.—Population, Area, Births, Deaths, &c.—

Showing enumerated and estimated population, area, persons per acre, births and deaths, birth-rates and death-rates, deaths at various ages, proportion of deaths of infants to births, deaths from seven principal zymotic diseases, and corresponding death-rates.

TABLE II.—Mortality—

Showing deaths from certain causes and all causes, classified according to Localities, Ages, and Diseases.

TABLE III.—Infectious Sickness.—

Showing new cases notified, and new cases removed to Hospital, classified according to Localities, Ages, and Diseases ; and giving particulars as to compulsory notification of Infectious Diseases and Hospital Provision.

NOTE.—The information in these three Tables is derived from the Returns made by the district Medical Officers of Health on Forms **A** and **B**, supplied to them by the Local Government Board. The proportion of persons per acre, the birth-rates and death-rates, proportion of deaths of infants to births, the deaths from the seven principal zymotic diseases and corresponding death-rates, have been added. The population in 1891 and the areas are from the official Census returns.

TABLE I.—POPULATION, AREA, BIRTHS, DEATHS, &c.

Showing enumerated and estimated population, area, persons per acre, births and deaths, birth-rates and death-rates, deaths at various ages, proportion of deaths of infants to births, deaths from 7 principal zymotic diseases, & corresponding death-rates.

SANITARY DISTRICTS.	Population at Census, 1881	Estimated Population at middle of 1886.	Area in Acres.	Persons to an Acre.	Births.	Birth-rate per 1000 Living.	Deaths.	Death-rate per 1000 Living.	Deaths from All Causes at subjoined Ages.						Deaths under 1 year to 1000 births.	Deaths from seven principal Diseases.	Principal Diseases.	Deaths from principal Diseases.	
									under 1 Year	1 and under 6	5 and under 16	16 and under 25	25 and under 35	65 and upwards.					
MUNICIPAL BOROUGHS.																			
Cogleton	10744	11389	2576	4·48	351	30·8	216	18·9	43	24	7	10	69	72	122	14	1·2		
Creswell	32783	38109	2133	17·41	1200	31·4	571	14·9	165	50	26	31	153	103	127	76	1·9		
Hyde	50670	51955	3074	10·80	293	30·7	361	20·3	188	52	27	26	207	123	196	89	1·2		
Macclesfield	86007	86009	8215	11·10	294	20·7	956	18·4	150	64	46	25	184	165	155	101	2·3		
Stalybridge	26783	31344	8195	8·94	837	29·8	572	20·3	141	20	21	165	134	168	69	2·4			
	183033	145534	14180	10·26	4312	29·6	2674	18·3	687	379	127	113	768	600	159	910	2·1		
OTHER URBAN DISTRICTS.																			
Alderley Edge	2270	2270	389	9·85	44	19·3	26	11·4	2	1	1	10	12	45	1	0·4			
Alsager	1312	2300	2241	1·11	48	23	23	9·2	3	1	1	2	11	5	32	23	0		
Altringham	12440	13212	632	19·5	388	29·9	288	17·6	63	24	8	5	54	80	157	21	1·7		
Ashley-upon-Mersey	4234	5200	1622	9·72	117	59	11·3	15	3	1	4	21	16	128	24	1·9			
Bisley	1421	1552	609	2·23	44	28·9	20	12·8	5	3	1	8	3	119	9	1·6			
Bebington	6318	5565	1054	6·27	201	30·3	69	12·4	18	7	5	1	26	12	84	9	1·7		
Bollington	5912	8113	494	7·02	93	24·5	58	14·8	10	4	2	14	14	145	7	1·6			
Bowdon	2762	2800	850	3·40	43	14·8	30	10·3	4	1	2	10	13	93	2	0·6			
Bredbury and Romiley																			
Bredbury	3901	4446	2536	1·75	105	22·6	64	14·3	14	6	6	4	17	17	183	3	0·6		
Romiley	1920	9132	1180	1·83	53	24·2	28	12·8	2	3	2	10	8	37	5	2·2			
Bromborough	1662	1880	150	1·13	38	20·8	15	8·2	6	...	...	2	7	163	1	0·5		
Buglawton	1382	1494	611	0·61	65	24·1	20	13·4	4	...	...	1	11	4	111	0	0·0	
Cheadle and Gatley	7782	8055	5612	1·05	158	28·4	184	15·7	29	14	6	9	83	34	140	8	0·9		
Dunford	17408	18020	1416	19·18	244	52·1	865	18·6	113	54	12	18	107	54	187	42	2·2		
Hollingworth	2305	2395	2085	1·83	81	27·6	54	18·7	21	8	1	17	15	160	4	1·3			
Hoole	3328	3329	881	10·03	97	29·1	49	14·7	8	5	2	11	11	82	16	4·8			
Hoylake and West Kirby																			
Hoyle	4076	5317	1514	3·65	137	28·1	73	13·1	15	11	6	1	23	14	147	10	1·8		
West Kirby	2439	3153	505	0·83	137	28·1	61	12·5	14	4	4	29	18	8	2·5				
Knutsford	4613	4911	1700	2·77	129	28·3	77	17·8	26	13	3	1	17	20	166	6	1·2		
Lynn	4935	5300	4757	1·28	182	23·5	81	14·1	20	6	2	7	30	16	141	4	0·7		
Middlewich	4402	4544	5776	1·72	172	22·7	32	9·8	5	5	2	4	17	19	134	1	0·3		
Moddershall	5270	5273	1084	3·01	208	38·9	81	16·8	25	10	4	2	23	17	265	4	2·5		
Nantwich	7412	7528	703	10·72	244	32·7	152	17·6	23	7	5	2	21	21	106	16	2·1		
Neston and Parkgate	3577	3871	9260	1·18	128	24·2	84	18·0	26	5	3	6	56	46	34	106	8	2·1	
Northwich	4014	17820	1388	12·82	835	31·4	314	17·6	117	53	14	7	16	144	8	21	0	0·0	
Runcorn	20550	21600	1179	16·32	620	34·6	216	15·1	80	8	8	14	72	52	170	83	1·8		
Sale	5544	11500	2006	5·73	291	25·9	132	11·4	56	7	2	2	27	24	53	129	21	1·1	
Sandbach	5524	6385	2654	2·35	200	31·5	105	16·5	30	14	5	5	27	45	125	10	0·6		
Tarporley	2704	3194	9144	0·44	67	24·6	36	13·2	5	4	1	11	32	11	150	12	2·0		
Wallasey																			
Warrington-cum-Seacombe	14893	18600	880	21·66	608	32·7	201	16·1	91	23	8	14	95	55	149	34	1·8		
Warrington	16825	28080	983	21·11	491	25·3	284	13·6	69	21	7	11	109	67	140	24	1·1		
Wilmslow	2067	2700	1693	1·61	73	27·0	38	14·0	8	7	2	13	10	109	3	0·8			
Winsford	6344	6741	5103	1·31	185	27·5	78	11·5	18	7	5	2	25	25	69	6	0·8		
Yearsley-cum-Whaley	10440	12635	5780	1·83	383	32·1	158	14·9	61	15	8	6	87	41	133	19	1·8		
RURAL DISTRICTS.																			
Bucklow-Altringham	8880	9285	15445	0·75	225	22·5	119	11·9	17	11	6	7	47	82	73	9	0·9		
Lynn	3320	3160	1467	0·21	71	23·5	45	14·2	6	1	1	5	14	19	70	70	0·3		
Knutsford	3561	3584	90310	0·17	90	25·1	48	13·3	13	3	1	12	19	144	3	0·3			
Wilmslow	4427	4868	13195	0·17	105	21·8	61	10·8	14	4	1	33	26	133	3	0·0			
Chester-Chester Hulme	10060	9550	58379	0·26	208	21·5	121	12·6	20	8	7	7	32	83	97	17	1·7		
Cleeton-Church Hulme	3009	3009	14912	0·20	96	25·0	37	12·3	7	4	1	1	15	101	101	0	0		
Cleeton	1181	1181	7883	0·14	61	21·5	15	9·9	3	1	1	1	1	1	14	3	0·6		
Sandbach	2220	2230	2434	0·98	240	27·6	197	15·7	35	12	10	5	37	47	103	1	0·6		
Disley	2230	2230	1320	0·21	50	21·7	27	11·7	5	1	1	1	11	6	10	0	0·5		
Macclesfield-Alderley	2265	3045	1320	0·22	31	20·0	46	15·1	8	3	2	16	17	191	1	0			
Bollington	2846	2307	7814	1·19	67	18·5	42	14·4	8	3	2	15	13	74	5	1·7			
Gawsworth	2672	2755	7783	0·15	68	26·8	68	17·0	37	12	3	3	14	19	79	1	0·3		
Frestbury	4966	5058	13637	0·87	116	30·3	57	17·0	12	5	3	1	41	24	104	6	1·1		
Rainbow	2097	2156	14274	0·15	68	29·7	44	20·4	6	3	2	1	15	15	103	6	0·6		
Sutton	1720	1820	12554	0·14	47	25·3	81	16·8	9	6	3	2	13	12	146	3	1·6		
Malpas	4024	21408	1247	0·24	127	27·2	63	13·5	9	6	3	1	16	31	70	2	0·4		
Nantwich-Crowe	10523	1149	8145	0·35	315	28·2	146	13·1	43	16	5	5	30	40	40	133	11	1·1	
Nantwich	8538	8538	1016	0·16	78	23·0	65	18·6	9	3	3	5	27	19	116	6	1·4		
Bunbury	3105	3105	15845	0·17	92	24·4	51	16·4	7	5	5	10	12	15	99	11	2·5		
Wrenbury	5597	5597	16163	0·18	170	20·3	69	13·9	18	20	6	5	11	26	118	8	1·4		
Northwich-Netherhawthorpe	9060	8561	18000	0·47	93	24·8	123	16·2	44	19	5	8	34	34	147	25	2·9		
Northwich	7081	6929	10921	0·74	363	24·8	123	13·3	35	16	8	8	35	19	118	8	1·4		
Over	3045	3045	13472	0·24	65	28·8	47	15·9	12	5	3	13	12	163	0	0			
Middlewich	2669	2759	12398	0·21	83	30·0	39	14·1	8	2	2	11	13	96	96	1	1·0		
Runcorn-Budworth	10526	11375	21559	0·46	807	26·9	243	14·3	31	10	8	5	48	42	101	10	0·8		
Runcorn	5372	5625	10400	0·27	248	28·4	61	16·8	10	8	5	17	15	121	6	1·2			
Frodsham	8763	9467	15727	0·60	289	30·4	114	12·0	29	16	6	8	17	73	8	14	1·2		
Stockport	10159	10505	9397	1·17	252	29·3	114	12·0	22	14	4	4	48	40	100	21	2·2		
Tarvin	12752	12752	56573	0·23	342	26·8	182	14·2	35	23	12	7	49	55	102	23	0·6		
Tatton	2576	2630	18616	0·19	61	23·1	42	15·9	8	5	3	11	10	181	5	1·9			
Wirral																			
Neston Sub-District	3500	3655	12063	0·28	120	35·4	53	14·4	16	1	2	2	17	15	123	8	2·1		
Eastham	10900																		

TABLE II.—MORTALITY.

Showing deaths from subjoined causes during the year ending December 31st, 1896, classified according to Localities, Ages and Diseases.

SANITARY DISTRICTS.	AGE AT DEATH.	FEVERS.																		Injuries.	All other Diseases.	TOTAL.
		Small-pox	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Exanthemata.	Mosca.	Whooping Cough.	Diarrhoea, and Dysentery.	Hæmorrhagic Fever.	Puthosis.	Bronchitis, Pneumonia, and Heart Disease.	Influenza.			
Municipal Boroughs.																						
Congleton	Under 5	3	2	2	...	1	1	1	1	1	1	1	1	1	1	20	20	1	1	34	67	
Crews...	5 upwards	16	8	1	...	1	1	1	1	1	1	9	8	20	12	26	90	3	5	85	148	
Hyde	Under 5	2	2	2	...	8	5	3	1	1	1	2	1	1	36	58	40	3	4	95	255	
Macclesfield	Under 5	1	37	27	1	3	5	1	1	1	1	7	4	1	5	44	87	56	2	10	139	
Stalybridges	Under 5	18	4	3	1	2	1	1	1	1	1	14	25	4	4	61	47	69	2	11	191	
	5 upwards	4	1	5	23	6	3	30	6	23	4	104	231	
	5 upwards	2	39	86	27	...	5	5	17	32	341	
Other Urban Districts.																						
Alderley Edge	Under 5	49	84	19	...	21	2	...	5	23	53	70	13	214	589	214	11	54	1253	2674
Alsager	5 upwards	1	3	2	3	3	3	3
Altrincham	5 upwards	...	4	1	2	20	...	15	19	
Ash-ton-upon-Mersey	Under 5	1	1	1	1	1	1	1	1	1	1	4	1	1	1	35	17	17	1	48	86	
Higher Bebington	5 upwards	1	1	1	1	16	147	
Lower Bebington	Under 5	5	1	1	1	1	1	1	1	1	19	41	
Bollington	5 upwards	3	1	...	...	...	...	...	1	1	1	5	...	...	...	1	2	1	8	12
Bowdon	Under 5	1	...	...	...	1	1	1	1	1	1	4	4	4	4	1	1	1	16	34
Bredbury and Romiley—Brab-dy	Under 5	1	1	1	1	1	1	1	1	18	25	
Romiley	5 upwards	1	1	1	1	2	6	14	3	1	14	20	
Bromborough	5 upwards	1	...	...	...	1	1	1	1	1	1	2	1	1	1	1	1	1	11	23
Buglawton	Under 5	...	...	...	...	...	...	...	...	...	...	1	1	1	1	1	1	1	4	6
Cheadle and Gatley	5 upwards	1	3	1	1	1	1	1	1	1	4	4	
Dukinfield	5 upwards	1	2	3	1	1	1	12	23	10	...	26	42	
Hollingworth	Under 5	7	2	1	1	1	1	1	1	1	1	1	1	43	
Hoole	5 upwards	3	1	4	...	3	1	1	1	1	1	12	11	28	33	30	1	9	78	191		
Hoylake and West Kirby—Hoyle-ake	Under 5	1	...	1	1	1	1	1	1	1	1	5	2	5	5	5	4	3	1	14	29	
West Kirby	5 upwards	1	...	...	...	1	1	1	1	1	1	2	5	5	5	6	2	1	22	44
Kautsford	Under 5	3	2	1	1	12	3	7	1	20	43	
Lymm	5 upwards	1	1	1	1	1	7	5	5	...	23	33	
Marple	Under 5	2	1	1	1	1	1	1	1	1	31	44	
Middlewich	Under 5	2	...	1	...	1	1	1	1	1	1	4	4	4	4	10	6	10	1	34	55	
Motttram	5 upwards	1	...	1	1	1	1	1	1	1	1	4	4	4	4	1	1	1	1	22	42	
Nantwich	Under 5	11	1	1	1	1	1	1	1	1	1	16	
Neston and Parkgate	5 upwards	1	1	1	1	1	1	2	1	1	1	9	15	7	...	20	47	
Northwich	Under 5	10	3	5	7	3	3	3	3	5	55	89	
Runcorn	Under 5	3	4	4	...	4	1	1	1	1	1	2	1	1	1	36	2	2	12	25		
Sals...	Under 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	27	
Sandbach	Under 5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	19	6	2	43	
Tarporley	Under 5	1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	33	44		
Wallasey—Poulton-cum-Seacombe	Under 5	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	2	3	37		
Liscard	5 upwards	2	1	1	1	2	1	1	1	1	1	4	1	1	1	1	1	1	1	16		
Wallasey	Under 5	1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10		
Wilmslow	Under 5	5 upwards	1	1	1	1	1	1	1	1	1	1	
Winsford	Under 5	6	1	2	...	1	1	1	1	1	1	2	1	1	1	7	10	10	3	25		
Teasdale-cum-Whalley	Under 5	1	...	1	1	1	1	1	1	1	1	3	5	5	5	4	12	20	2	33		
Convalescent Hospital & Royal Asylum, Cheadle, and Chester Under 5 Workhouse, Hoole (less proportion than belonging to County)	5 upwards	...	...	...	...	...	...	...	...	...	...	1	1	1	1	1	1	1	1	10
Rural Districts.																						
Bucklow—Altrincham	Under 5	62	25	16	...	39	2	...	9	...	12	26	67	134	13	265	620	281	14	93	20,097	3687
Lymm	5 upwards	1	1	1	...	2	2	2	9	14	13	1	1	1	1	10	28	
Knutsford	Under 5	1	...	1	1	1	1	1	3	1	1	1	1	1	1	1	6	
Wilmslow	Under 5	5 upwards	1	...	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	21	35	
Chester	Under 5	4	1	1	1	1	1	1	1	1	1	6	2	8	14	9	1	1	1	30	63	
Congleton—Church Hulme	Under 5	2	1	1	1	1	1	1	1	1	1	1	6	2	4	7	16	1	1	11	26	
Congleton	5 upwards	1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Sandbach	Under 5	6 upwards	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	14		
Disley	Under 5	1	1	1	1	1	1	1	1	1	1	7	16	15	1	1	1	1	1	53		
Macclesfield—Alderley	5 upwards	...	...	...	...	...	...	...	...	...	1	1	10	1	1	1	1	1	1	21
Bollington	Under 5	1	...	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	21		
Gawsworth	5 upwards	1	...	1	1	1	1	1	1	1	1	3	2	1	1	1	1	1	1	35		
Prestbury	5 upwards	1	...	1	1	1	1	1	1	1	1	4	3	2	1	1	1	1	1	12		
Rainow	5 upwards	1	...	1	1	1	1	1	1	1	1	4	3	2	1	1	1	1	1	11		
Sutton	5 upwards	1	...	1	1	1	1	1	1	1	1	5	4	3	2	1	1	1	1	10		
Malpas	Under 5	5 upwards	1	...	1	1	1	1	1	1	1	3	2	1	1	1	1	1	1	7		
Nantwich—Crows...	Under 5	3	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1		
Nantwich	Under 5	5 upwards	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1		
Bunbury	Under 5	5 upwards	5	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Wrenbury	Under 5	5 upwards	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Northwich—Weaverham	Under 5	1	2	1	1	2	1	1	1	1	1	6	7	1	1	1	1	1	1	1		
Northwich	5 upwards	1	1	1	1	1	1	1	1	1	1	1	7	17	8	1	1	1	1	1		
Over...	Under 5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Middlewich	Under 5	1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Runcorn—Budworth	Under 5	2	1	1	1	1	1	1	1	1	1	6	5	3	1	14	19	12	16	29		
Runcorn	5 upwards	2	2	1	1	2	1	1	1	1	1	2	1	1	1	1	26	20	6	41		
Frodsham	5 upwards	1	1	1	1	2	1	1	1	1	1	1	4	3	2	1	8	18	43			
Stockport	Under 5	2	1	1	1	1	1	1	1	1	1	5	2	1	1	1	6	11	25			
Tarvin	5 upwards	1	1	1	1	1	1	1	1	1	1	6	5	3	1	14	19	12	16			
Twintwistle	5 upwards	2	1	1	1	1	1	1	1	1	1	6	5	3	2	1	1	5	13			
Wirral—Neston sub-district	Under 5	1	...	1	1	1	1	1	1	1	1	7	1	1	1	1	1	1	1	1		
Eastham	5 upwards	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	1		
Woodchurch	Under 5	1	1	1	1	1	1	1	1	1	1	7	1	1	1	1	1	1	1	1		
Birkonhead	Under 5	5 upwards	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
County Asylum, Upton, in Chester Rural District	Under 5	5 upwards	5	5	5	5	5	5	5	5	5	7	3	2	1	1	1	1	1	22		
		32	33	22	2</																	

TABLE III.—INFECTIONOUS SICKNESS

Showing new cases notified and new cases removed to Hospital during the year ending December 31st, 1896, classified according to Localities, Ages and Diseases and giving particulars as to compulsory notification of Infectious Diseases and Hospital Provision.

SANITARY DISTRICTS.	AGES.	New cases coming to the knowledge of the Medical Officer of Health in each Locality.												Number of such cases removed from their homes for treatment in Hospital.												IS COMPULSORY NOTIFICATION ACT ADOPTED?	Is Hospital for Infectious Diseases provided?	
		FEVERS.				FEVERS.				FEVERS.				FEVERS.				FEVERS.				FEVERS.						
		Small-pox.	Scarlatina.	Diphtheria.	Membranous Group.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Feverish.	Chorea.	Erysipels.	Torax.	Small-pox.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Periphal.	Chorea.	Erysipels.	TOTAL.				
Municipal Boroughs.																												
Congleton	Under 5	78	3											31												No	No	
Crowe	5 upwards	54	10	3										53														
Hyde	Under 5	134	17				1							12	237	1												
Macclesfield	Under 5	2	243	12			15			3				42	225		104	7		2								
Stalybridge	5 upwards	117	23	9		29			5					86		13												
5 upwards	10	68	7		1					2				213		39												
5 upwards	19	169	1		22					1				117														
5 upwards	104	6	3		3					26				17	55													
Other Urban Districts.		2	863	208	20	59			10		72	1374	1	104	59			2								166		
Alderley Edge	Under 5																											
Alsager	5 upwards		9			3								2	14													
Altringham	Under 5	1		1		2			1		1	12																
Ashton-upon-Mersey	Under 5	24	9	1		12	1				11	58	21	2														
Higher Bebington	5 upwards	14	3			2					2	21																
Lower Bebington	5 upwards	2	1																									
Hollington	Under 5	9	3			8					6	62	28	11														
Lowdon	Under 5	34	14								1	7																
Redbury and Romiley—Bredbury	Under 5	1																										
Romiley	5 upwards	5	2	1		3			1		3	13	1															
Stockport	Under 5	1	1																									
Uggleston	5 upwards	4		1		1																						
Headingley and Gately	Under 5	17				8	1		1		1	5																
West Kirby	5 upwards	1																										
Alkinfield	Under 5	59	2	2								1	4															
Collingworth	5 upwards	80	1	1		19			1		11	112																
Colne	Under 5	1	2			2					1	4																
Colpoe	5 upwards	1	4									7																
Colyhouse and West Kirby—Hoylake	Under 5	5	27										1	35														
West Kirby	5 upwards	37	6			6			1		8	8	9	4														
Warrington	Under 5	4	2											27	1													
Warrington	5 upwards	14	3			12					4	39	6															
Warrington	Under 5	5												22	11													
Warrington	5 upwards	5												11														
Warrington	5 upwards	5												7														
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Warrington	5 upwards	5												67														
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